RUSS OLSON VOLUME 6

CARHOUSES AND REPAIR SHOPS

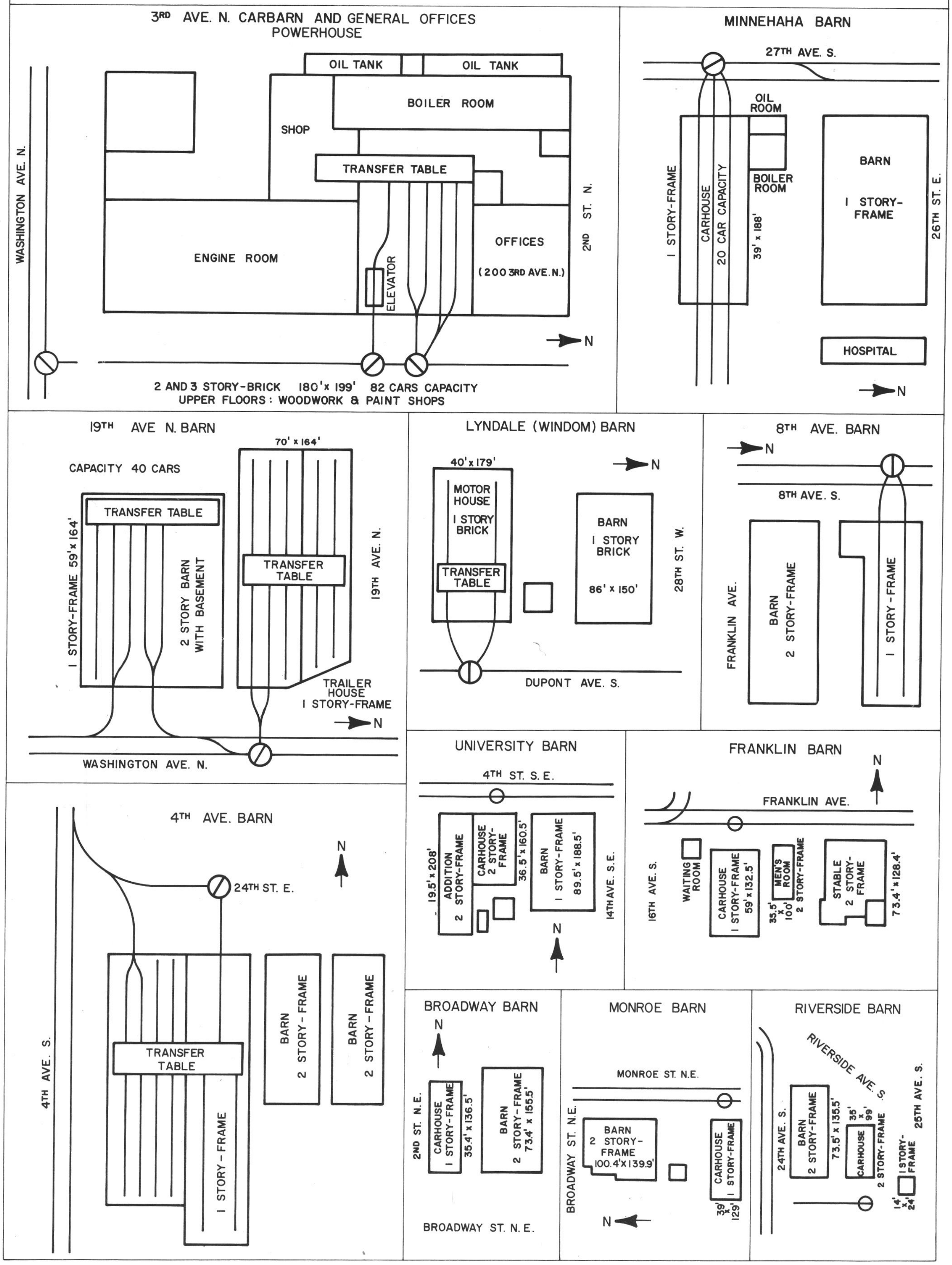
BUILDINGS

Sub-divisions Within This Volume

- Car Stations, Repair Shops, and Other Buildings
- (Unnamed Divider)
- (Unnamed Divider)
- Contents of the Back Pocket

CAR STATIONS, REPAIR SHOPS
and
OTHER BUILDINGS

MINNEAPOLIS ST. RY. HORSE CAR BARNS TRACK DIAGRAMS 1890


3RD AVE. N. CARBARN AND GENERAL OFFICES
POWERHOUSE
OIL TANK
OIL TANK
BOILER ROOM
SHOP
TRANSFER TABLE
ENGINE ROOM
ELEVATOR
OFFICES
(200 3RD AVE. N.)
WASHINGTON AVE. N.
2ND ST. N.
N
2 AND 3 STORY-BRICK 180' x 199' 82 CARS CAPACITY
UPPER FLOORS: WOODWORK & PAINT SHOPS
MINNEHAHA BARN
27TH AVE. S.
OIL ROOM
BOILER ROOM
1 STORY-FRAME
CARHOUSE
20 CAR CAPACITY
39' x 188'
BARN
1 STORY-FRAME
26TH ST. E.
HOSPITAL
N
19TH AVE. N. BARN
CAPACITY 40 CARS
70' x 164'
TRANSFER TABLE
1 STORY-FRAME 59' x 164'
2 STORY BARN WITH BASEMENT
TRANSFER TABLE
19TH AVE. N.
TRAILER HOUSE
1 STORY-FRAME
N
WASHINGTON AVE. N.
LYNDALE (WINDOM) BARN
40' x 179'
MOTOR HOUSE
1 STORY BRICK
TRANSFER TABLE
N
BARN
1 STORY BRICK
86' x 150'
28TH ST. W.
DUPONT AVE. S.
8TH AVE. BARN
N
8TH AVE. S.
FRANKLIN AVE.
BARN
2 STORY-FRAME
1 STORY-FRAME
4TH AVE. BARN
N
24TH ST. E.
4TH AVE. S.
TRANSFER TABLE
1 STORY-FRAME
BARN
2 STORY-FRAME
BARN
2 STORY-FRAME
UNIVERSITY BARN
4TH ST. S.E.
19.5' x 208'
ADDITION
2 STORY-FRAME
CARHOUSE
2 STORY-FRAME
36.5' x 160.5'
BARN
1 STORY-FRAME
89.5' x 188.5'
14TH AVE. S.E.
N
FRANKLIN BARN
N
FRANKLIN AVE.
16TH AVE. S.
WAITING ROOM
CARHOUSE
1 STORY-FRAME
59' x 132.5'
MEN'S ROOM
35.5' x 100'
2 STORY-FRAME
STABLE
2 STORY-FRAME
73.4' x 128.4'
BROADWAY BARN
N
2ND ST. N.E.
CARHOUSE
1 STORY-FRAME
35.4' x 136.5'
BARN
2 STORY-FRAME
73.4' x 155.5'
BROADWAY ST. N.E.
MONROE BARN
MONROE ST. N.E.
BROADWAY ST. N.E.
BARN
2 STORY-FRAME
100.4' x 139.9'
CARHOUSE
1 STORY-FRAME
39' x 129'
N
RIVERSIDE BARN
RIVERSIDE AVE. S.
24TH AVE. S.
BARN
2 STORY-FRAME
73.5' x 135.5'
CARHOUSE
35' x 99'
2 STORY-FRAME
25TH AVE. S.
1 STORY-FRAME
14' x 24'

MINNEAPOLIS STREET RAILWAY
STABLES AND CARHOUSES
Compiled from Minneapolis Tribune Articles

7-28-1875: Mpls. St. Ry. has already begun construction of its stable. Two-story, flat roof, frame construction, 80' x 100'. [Original Office, Barn and Shop]

5-20-1878: See print-out "The Street Car Stables".

11-5-1878: From the print-out "The Street Railway" in Notebook 2A.
[Original Office, Barn and Shop] The old carhouse was remodeled into stables. A new brick carhouse, 65' x 100', capacity 25 cars, has been built. Includes a complete repair shop, blacksmith shop, paint shop, and waiting room for the drivers. Spur track to reach it has been laid from Washington Ave.

10-11-1879: Interview with Supt. Atwood. Stable is located on the corner of 2nd St. N. and 4th Ave. N. 80' x 100' . First floor has 95 stalls and mangers; 5 horses for each car are in a row by themselves. The carhouse is brick 65' x 100' with 6 tracks running the entire length; includes a transfer table. [Original Office, Barn and Shop]

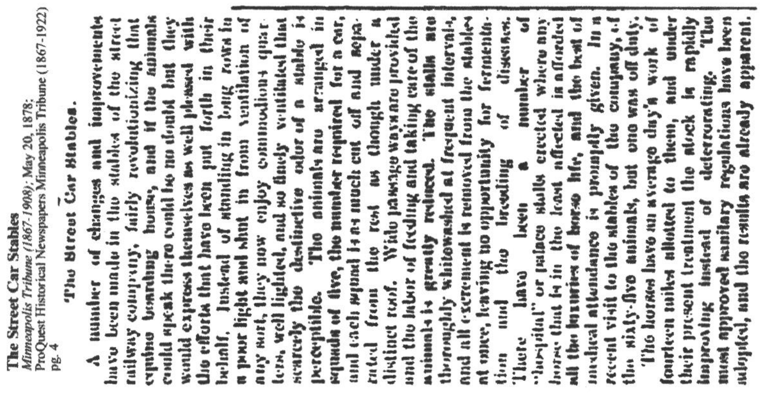
5-4-1884: Addition to the present stables, corner of 18th Ave. N. and Washington Ave. N.; the building extended to the side and rear, and a barn cellar put underneath it. When completed it will have accommodation for 400 horses, a large number of cars, and a large space for hay and feed.

5-2-1886: The extensive building at the corner of 2nd St. and 3rd Ave. N. is used as the repair shops of the Mpls. St. Ry. The general offices of the company are located upon the first and second floors in the corner of the building fronting on both streets. The room occupying the ground floor in the corner of the building is the private office of C. G. Goodrich, the superintendent of the company. This with the large room immediately in the rear devoted to the bookkeepers, is finished in cherry, handsomely carpeted and papered, and with desks and furniture of convenient and tasteful styles. Opening from the bookkeepers' office is a large fire-proof vault in which are kept the books and papers of the company. Still further toward the rear of the building are found the purchasing agent's office and the supply room. In the former is the telephone switchboard, giving connections to all the barns of the company, and speaking tubes connecting with the different parts of the shops.

On the second floor, directly over the offices of the superintendent and bookkeepers, are found Thomas Lowry's private offices. These rooms are finished in cherry and elegantly furnished. On the same floor is the counting room where a number of young men and women are constantly engaged in counting and sorting the money and tickets received from the cars. From this room opens a commodious fire and burglar-proof vault. All these offices receive light from windows in the 2nd St. front.

In that portion of the building devoted to the shops the following departments are found. First floor: blacksmithing and machine work; second floor: woodworking shop and harness shop; third floor: paint shop. The company here has facilities for manufacturing cars, but as yet has confined itself to rebuilding and repairing. A number of cars destined for Duluth were in various stages of repair and several completed appeared quite equal to new ones.

10-1-1889: Raising the roof of the carhouse at 4th Ave. S. and 24th St. E. to provide clearance for trolley wires.



The Street Car Stables
Minneapolis Tribune (1867-1908); May 20, 1878;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 4

The Street Car Stables.

A number of changes and improvements have been made in the stables of the street railway company, fairly revolutionizing that equine boarding house, and if the animals could speak there could be no doubt but they would express themselves as well pleased with the efforts that have been put forth in their behalf. Instead of standing in long rows in a poor light and shut in from ventilation of any sort, they now enjoy commodious quarters, well lighted, and so finely ventilated that scarcely the destinctive odor of a stable is perceptible. The animals are arranged in squads of five, the number required for a car, and each squad is as much cut off and separated from the rest as though under a distinct roof. Wide passage ways are provided and the labor of feeding and taking care of the animals is greatly reduced. The stalls are thoroughly whitewashed at frequent intervals, and all excrement is removed from the stables at once, leaving no opportunity for fermentation and the breeding of diseases. There have been a number of "hospital" or palace stalls erected where any horse that is in the least affected is afforded all the luxuries of horse life, and the best of medical attendance is promptly given. In a recent visit to the stables of the company, of the sixty-five animals, but one was off duty.

The horses have an average day's work of fourteen miles allotted to them, and under their present treatment the stock is rapidly improving instead of deterrorating. The most approved sanitary regulations have been adopted, and the results are already apparent.

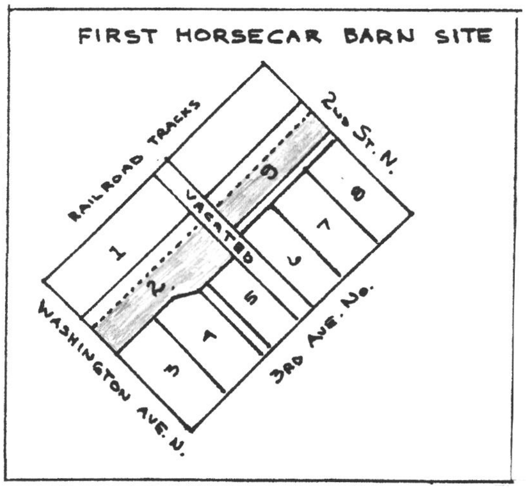
HORSECAR BARNS

MINNEAPOLIS STREET RAILWAY

The measurements on the drawings in ERofM were taken from the Frank Trumbull 10-18-1893 Inspection Report. They vary in some instances from the drawings contained in the A. L. Drum & Company 1-1-1916 Valuation Report. Those drawings are included in this notebook. The typewritten information contains either A. L. Drum & Co. measurements or both Trumbull and Drum.

Original Office, Barn and Shop
1875-1881

Washington Ave. N. near 3rd Ave. N.. The office was located on part of Lot 2 fronting on Washington Ave. N. while the barn was located on part of Lot 9 fronting on 2nd St. N. According to the corporate minute books it was found necessary to remove the office and vacate the barn because of "the proximity of the railroad tracks". The property was sold to William D. Washburn in August 1881.



Mpls.Tribune 11-5-1878 indicates a brick carhouse 65'x100' with a capacity of 25 cars had been erected, which included a repair shop, blacksmith and paint shops, and trainmen's room. Faced 3rd Ave.N. near 2nd St. N. with a spur track to reach it laid from Washington Ave. The old carhouse under same roof with the stables had been converted into additional stables.

4th Ave. S. Barn
1878-1890

4th Ave. S. and 24th St. E. Real estate deeds were recorded in May 1880 from Calvin and Harriet Goodrich, and in November 1883 from Thomas and Beatrice Lowry, Calvin and Cora Goodrich.

Carhouse	one-story, frame	59'5" x 196'5" to 211'10"
Barn	two-story, frame	69' x 136'
Barn	two-story, frame	73'5" x 136'

Tangent track 960 l.f.; curved track 105 l.f.; depressed track for transfer table 50 l.f. All buildings removed prior to 5-15-1894. Portions of real estate sold September 1904, July 1905, October 1905, and March 1906. The remainder was sold to Arcade Investment Co. in November 1907.

Franklin Barn
1878-1889

Franklin Ave. E. and 16th Ave. S. Real estate deeds were recorded in June 1881 and November 1883 from Thomas and Beatrice Lowry. Measurements are as shown on the drawing except the Waiting Room, one-story frame, which was 22'4" x 30'5". Tangent track 510 l.f. All buildings removed prior to 5-15-1894. Real estate sold to the Arcade Investment Co. in November 1907.

AVERY®
POLY VU

Riverside Barn
1880-1890

Riverside Ave. S. and 24th Ave. S. Real estate deed recorded in April 1880 from Clinton Morrison. The carhouse was one-story frame. The A.L. Drum & Co. Valuation Report gave the measurements for the Blacksmith Shop as 14'6" x 24'. Tangent track 290 l.f. All buildings removed prior to 5-15-1894. Real estate sold in October 1902.

Broadway Barn
1881-1891

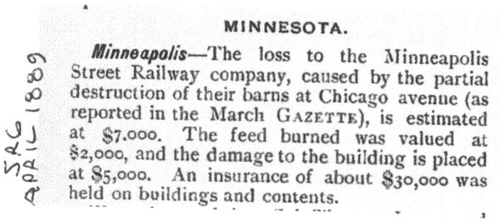
Broadway St. and 2nd St. N.E. Real estate purchased from Thomas and Beatrice Lowry; no deed recording date. Tangent track 240 l.f. One turntable. All buildings removed prior to 5-15-1894. Real estate was still owned in 1897. Disposition and date not recorded.

8th Ave. S. Barn
1881-1890

8th Ave. S. and Franklin Ave. E. Real estate deeds recorded in September 1882 and November 1883 from Thomas and Beatrice Lowry. Measurements from the A. L. Drum & Company Valuation Report.

Barn	two-story, frame	99'6" x 123'6"
Carhouse	one-story, frame	61'4" x 149'
Waiting Room	one-story, frame	24' x 28'

Tangent track 590 l.f. All buildings removed prior to 5-15-1894. Real estate sold in July 1902.



SRG APRIL 1889

MINNESOTA.

Minneapolis—The loss to the Minneapolis Street Railway company, caused by the partial destruction of their barns at Chicago avenue (as reported in the March GAZETTE), is estimated at $7.000. The feed burned was valued at $2,000, and the damage to the building is placed at $5,000. An insurance of about $30,000 was held on buildings and contents.

University Barn
1881-1891

4th St. S.E. and 14th Ave. S.E. Real estate deed recorded in September 1882 from Thomas and Beatrice Lowry.

Barn was two-story, frame. The two Sheds measured 20'6" x 24'6" and 12' x 16'. Tangent track 1050 l.f. All buildings removed prior to 5-15-1894. Real estate sold March through August 1902 in five parcels.

Monroe Barn
1882-1891

Monroe St. N.E. and Broadway St. N.E. Real estate purchased from Thomas and Beatrice Lowry; lno deed recording date.

Measurements		Trumbull 1-1893	A.L. Drum & Company
Barn	two-story, frame	100'4" x 139'9"	79'6" to 100'4" x 139'9"
Carhouse	one-story, frame	39' x 129'	39' x 129'
Blacksmith Shop	one-story, frame	not listed	20'4" x 24'4"

Tangent track 300 l.f. All buildings removed prior to 5-15-1894. Real estate sold: 5/6ths in 1895 and 1/6th in April 1902.

19th Ave. N. Barn
1882- ?

Washington Ave. N. and 19th Ave. N. Real estate purchased as follows.

1. east one-half block:
   a. first parcel recorded in September 1882 from Thomas and Beatrice Lowry.
   b. remaining parcels recorded in May 1884 and September 1888.
2. west one-half block:
   a. one parcel recorded in October 1888.
   b. remaining parcels recorded in October 1891 and February 1893.

Measurements		Trumbull 1-1893	A.L. Drum & Co.
Barn	two-story and basement, frame and stone	59' x 164'	164' wide x 165' long
Carhouse	two-story and basement, stone	70' x 164'	62'6" x 165'

Tangent track 1360 l.f.; depressed track for transfer table 215 l.f.

This facility was converted to a car station during electrification of the system. As of 1897 it was used only for storage of unused cars, including winter storage of open cars. Not in use as of the 1902 U.S. Census.

Disposition, keyed to foregoing acquisition, was as follows.

1. east one-half block:
   a. An old barn on the property was sold in March 1902. 1/3 sold in June 1907. 2/3 sold in August 1909.
2. west one-half block:
   a. Sold in May 1903.
   b. Sold to Arcade Investment Co. in November 1907.

Windom (Lyndale) Barn

1884- ??

Dupont Ave. S. and 28th St. W. Real estate deed to Lots 1-12, Block 5, was recorded in November 1883.

Measurements		Trumbull 1-1893	A.L. Drum & Co.
Barn	two-story, brick	86' x 150'	86' x 150'
Carhouse	one-story, brick	40' x 179'	40'4" x 178'9"
Oil House	one-story, frame	not listed	6'3" x 8'3"

Tangent track 350 l.f.; curved track 50 l.f.; depressed track for transfer table 35 l.f.

This facility was converted to a car station during electrification of the system. As of 1897 it was used only for storage of unused cars, including winter storage of open cars. Damaged by fire 7-7-1906 which was repaired from July thru December 1906. The carhouse was remodeled into a barn for horses used on tower and truck wagons. Lot 3 was sold in April 1903. One-third sold in June 1907. The remaining two-thirds, which included the buildings, was sold in August 1911.

Minnehaha Barn

1884- ??

27th Ave. S. and 26th St. E. Real estate deed recorded in March 1884.

Measurements		Trumbull 1-1893	A. L. Drum & Co.
Barn	one-story, frame	not listed	106' x 188'
Carhouse	two-story, frame	39' x 188'	39'2" x 188'1"
Oil & Boiler Room	one-story, frame	not listed	13'8" x 40'
Hospital	one-story, frame	not listed	22'5" x 81'5"

Tangent track 1010 l.f.; curved track 70 l.f.

This facility was converted to a car station during electrification of the system. Sometime after 1898 it was taken out of operating service and used only for car storage purposes. It was in use as such as of the 1902 U.S. Census.

Real estate sold:

1. south one-half to Flour City Ornamental Iron Co. in July 1901.
2. north one-half in June 1907.

3rd Ave. N. Barn
1885- ??

3rd Ave. N. and 2nd St. N. Real estate: the corporate minutes for 11-30-1883 indicated that MSR then owned Lots 7 and 8 (see plat map of original barn property on page 1) [redacted]. The real estate record lists two lots acquired in August 1885, one lot in June 1886 and two lots in April 1890. The corporate minutes for 5-28-1886 stated that the SW½ of Lot 6 was acquired through an exchange for Lots 1-4 and 9-12, Block 3, Windom Addition, with Lac Stafford. (These lots had been purchased in November 1883 but never used for operations.) Condemnation proceedings were initiated to acquire title to 50 ft. front and rear of Lot 9 adjacent to the rear of Lots 6, 7 and 8.

The general offices were moved here, effective June 1, 1885. Address was 200 3rd Ave. N.

The Trumbull 1-1893 Report stated: two and three-story brick, 180' x 199', carhouse capacity 82 cars. Upper floors housed the woodwork and paint shops.

Measurements

Original buildings:		
Carhouse and Office	two-story and basement, brick	88' x 140'6"
Stable	one-story frame (located on the far southwest corner of the property)	20'2" x 60'3"
Addition;	two story and basment, stone and brick:	
west of the Engine Room		54.1' x 65.2'
Engine Room		84.1' x 128.75' and 74.65' x 63.3'
Shop		55.9' x 62.85'
Boiler Room		55.9' x 99.8'
Basement under the street		53'3" x 75' 1"
with a condenser pit		22' x 46'9" x 13'9" deep

Tangent track 530 l.f.; curved track 60 l.f.; depressed track for transfer table 135 l.f.

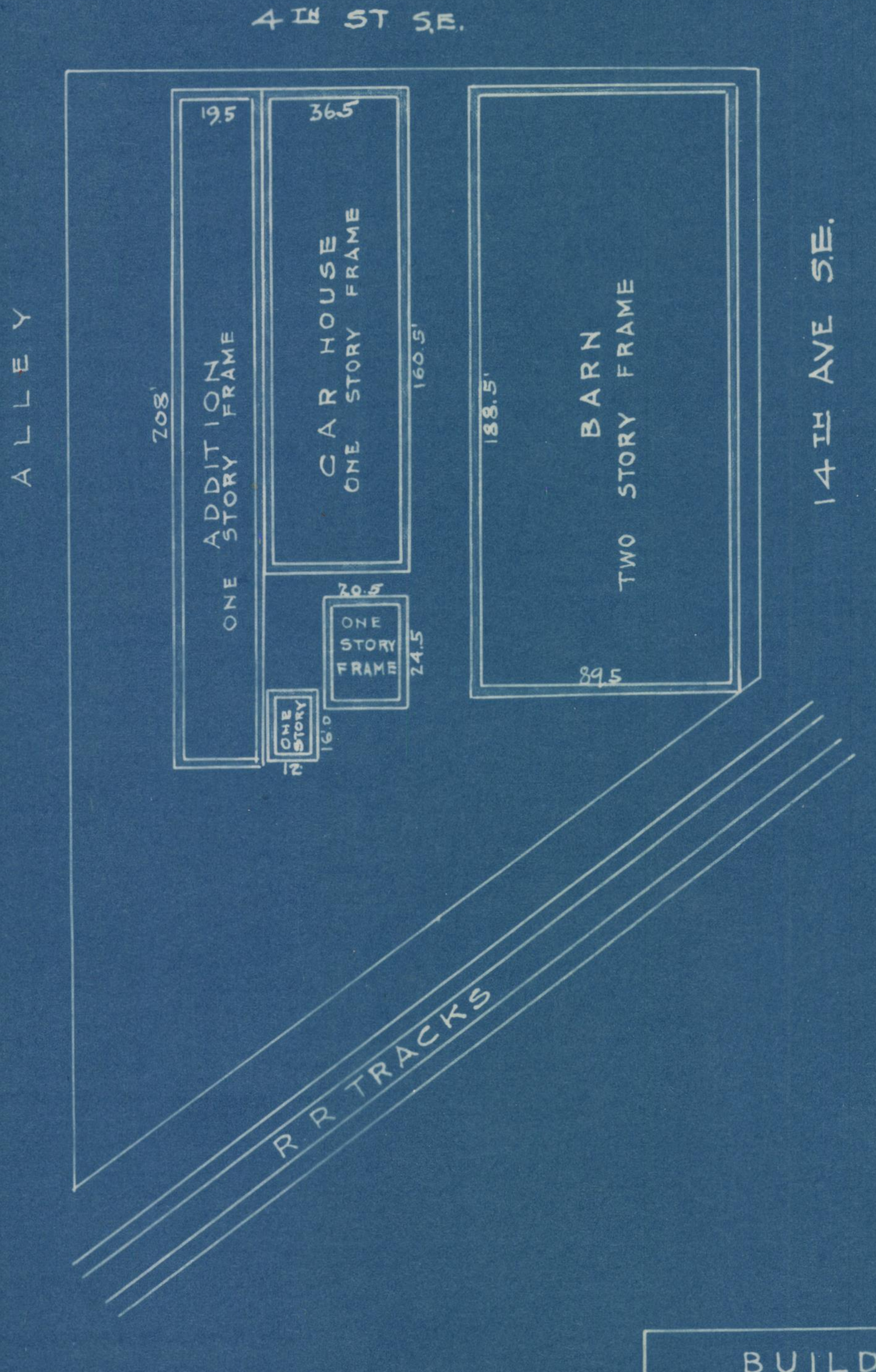
The original facility was converted to a car station during electrification of the system. The Addition was originally planned as a powerhouse for the proposed cablecar system but instead was modfified into a powerhouse for the electric car system. The repair shops for the Minneapolis system were located here until August 1892. As of 1897 it was used only for storage of unused cars, including winter storage of open cars.

The property and buildings were sold in December 1908 to W. B. and W. G. Jordan.

(In use during the 1970's as the Colonial Warehouse Company. Remodeled during the 1990's into an office building.)

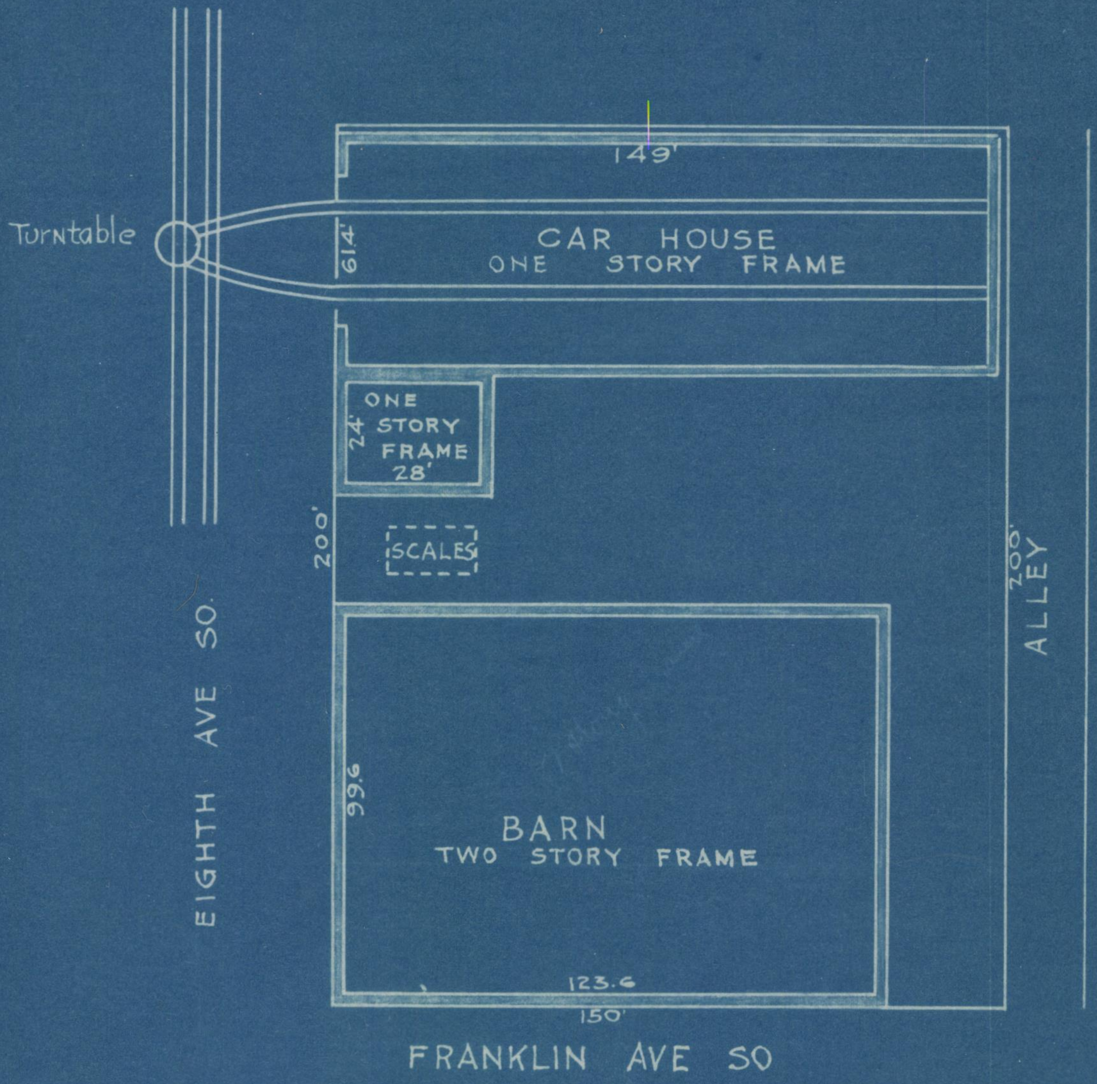
First Street Property

This was a two-story and basement brick building, 22' x 83', located on the ~~south~~ north west corner of 1st St. and Hennepin Ave. It was used as a passenger transfer station. Purchased in January 1884. Sold in September 1901.


4TH ST S.E.
ALLEY
14TH AVE S.E.
208'
19.5
ADDITION
ONE STORY FRAME
36.5
CAR HOUSE
ONE STORY FRAME
160.5'
BARN
TWO STORY FRAME
188.5'
89.5
20.5
ONE STORY FRAME
24.5
ONE STORY
16.0
12
R R TRACKS

BUILDINGS
UNIVERSITY BARN
UNIVERSITY AVE AND 4TH ST. S.E.
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO

AVERY® POLY-VU TJ


Turntable
149'
CAR HOUSE
ONE STORY FRAME
61.4'
ONE STORY FRAME
24'
28'
200'
SCALES
200'
ALLEY
EIGHTH AVE SO
99.6
BARN
TWO STORY FRAME
123.6
150'
FRANKLIN AVE SO

BUILDINGS
8TH AVE BARN
~8TH AVE. SO. AND FRANKLIN AVE.
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO

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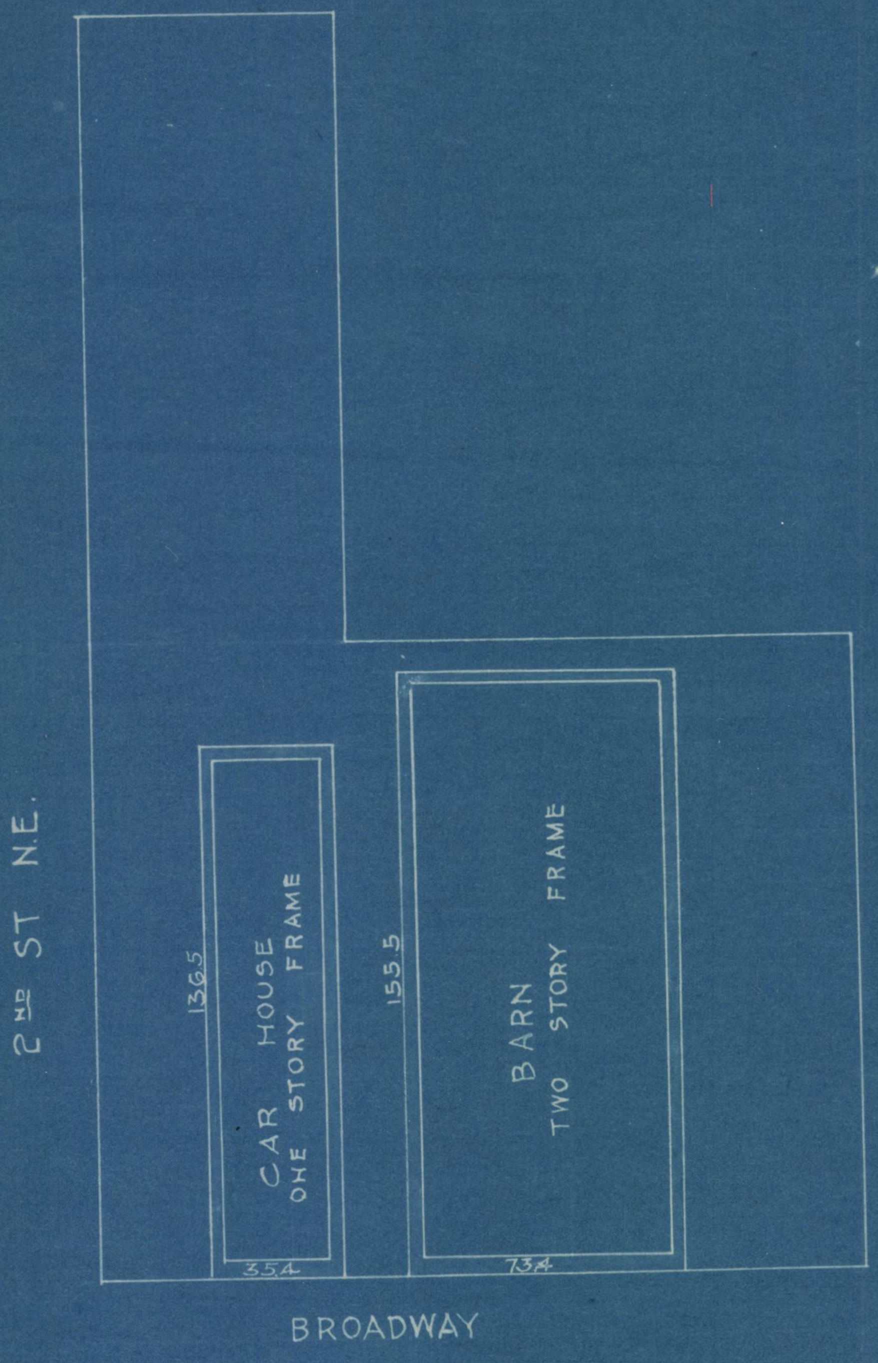
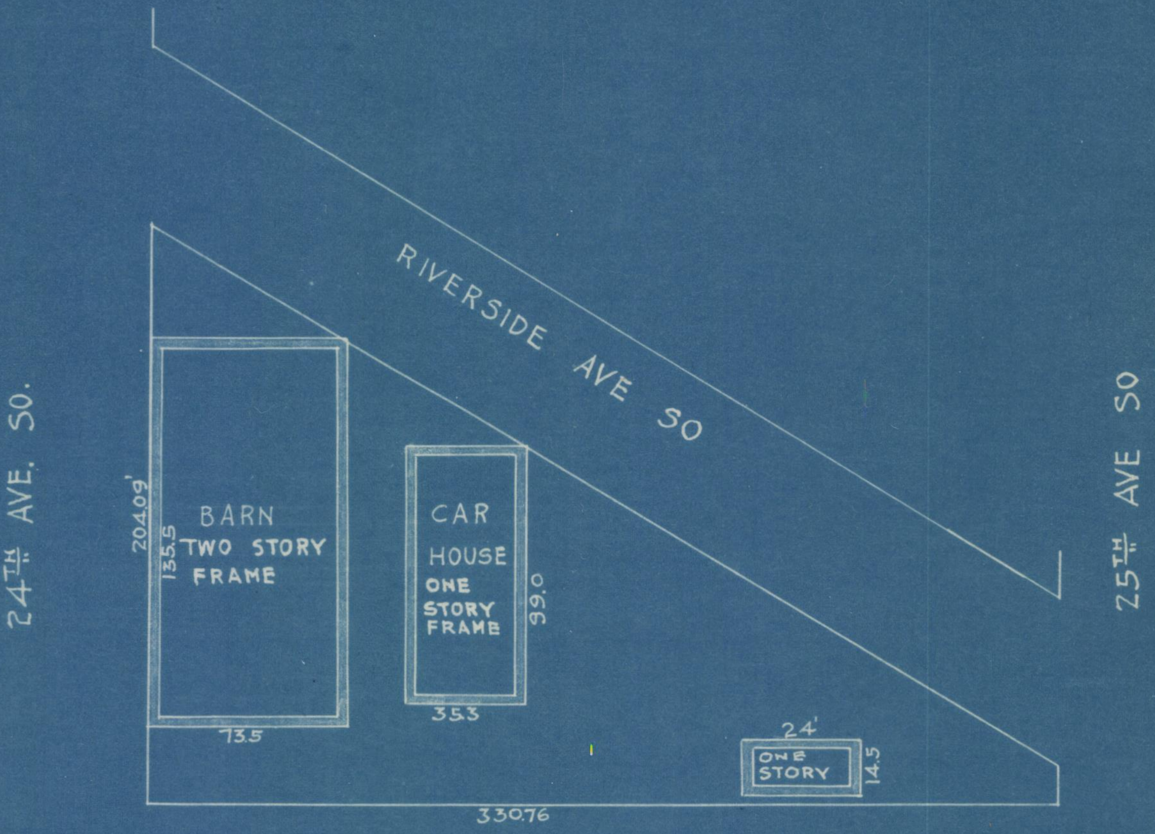
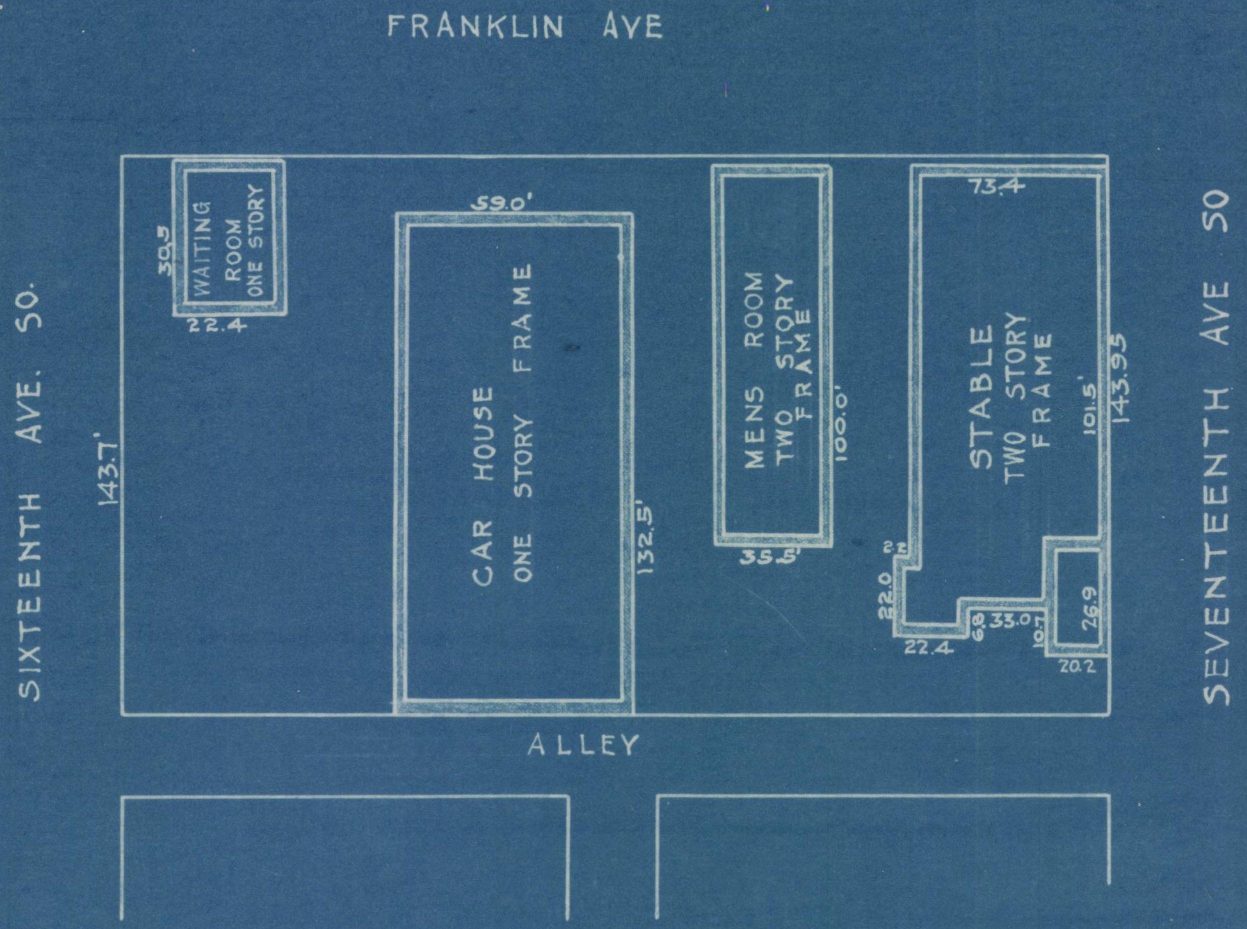

2ND ST N.E.
CAR HOUSE
ONE STORY FRAME
136.5
35.4
BARN
TWO STORY FRAME
155.5
73.4
BROADWAY

BUILDINGS
BROADWAY CAR HOUSE
BROADWAY AND 2ND ST. N.E.
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO

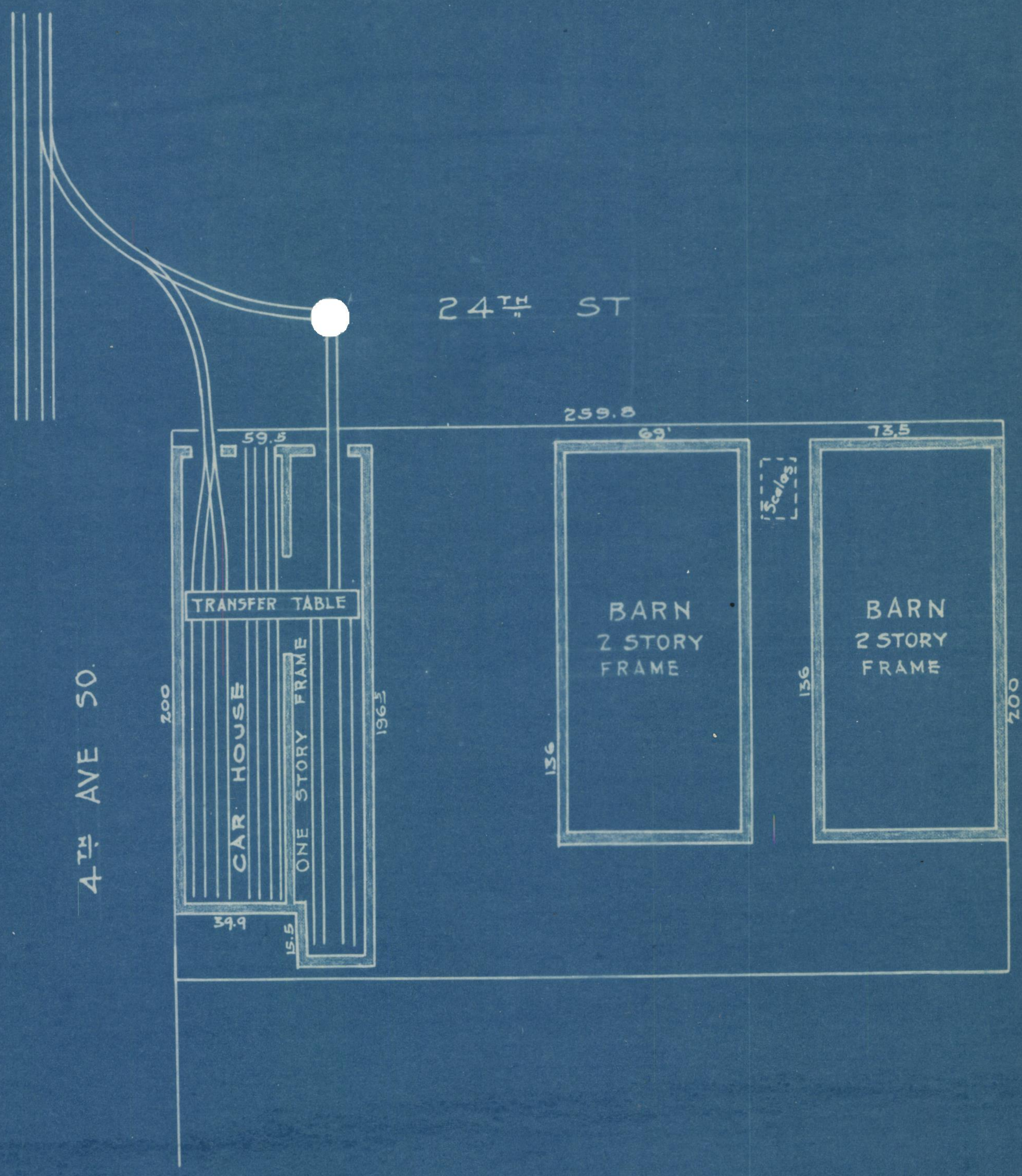

24TH AVE. SO.
RIVERSIDE AVE SO
25TH AVE SO
BARN
TWO STORY
FRAME
204.09'
135.5
73.5
CAR
HOUSE
ONE
STORY
FRAME
99.0
35.3
24'
ONE
STORY
14.5
330.76

BUILDINGS
RIVERSIDE BARN
RIVERSIDE AVE AND 24TH AVE
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO


FRANKLIN AVE
SIXTEENTH AVE. SO.
SEVENTEENTH AVE SO
ALLEY
WAITING ROOM ONE STORY
30.5
22.4
59.0'
CAR HOUSE ONE STORY FRAME
132.5'
143.7'
MENS ROOM TWO STORY FRAME
100.0'
35.5'
STABLE TWO STORY FRAME
73.4
101.5'
143.95
2.2
22.0
22.4
6.8
33.0
10.7
26.9
20.2

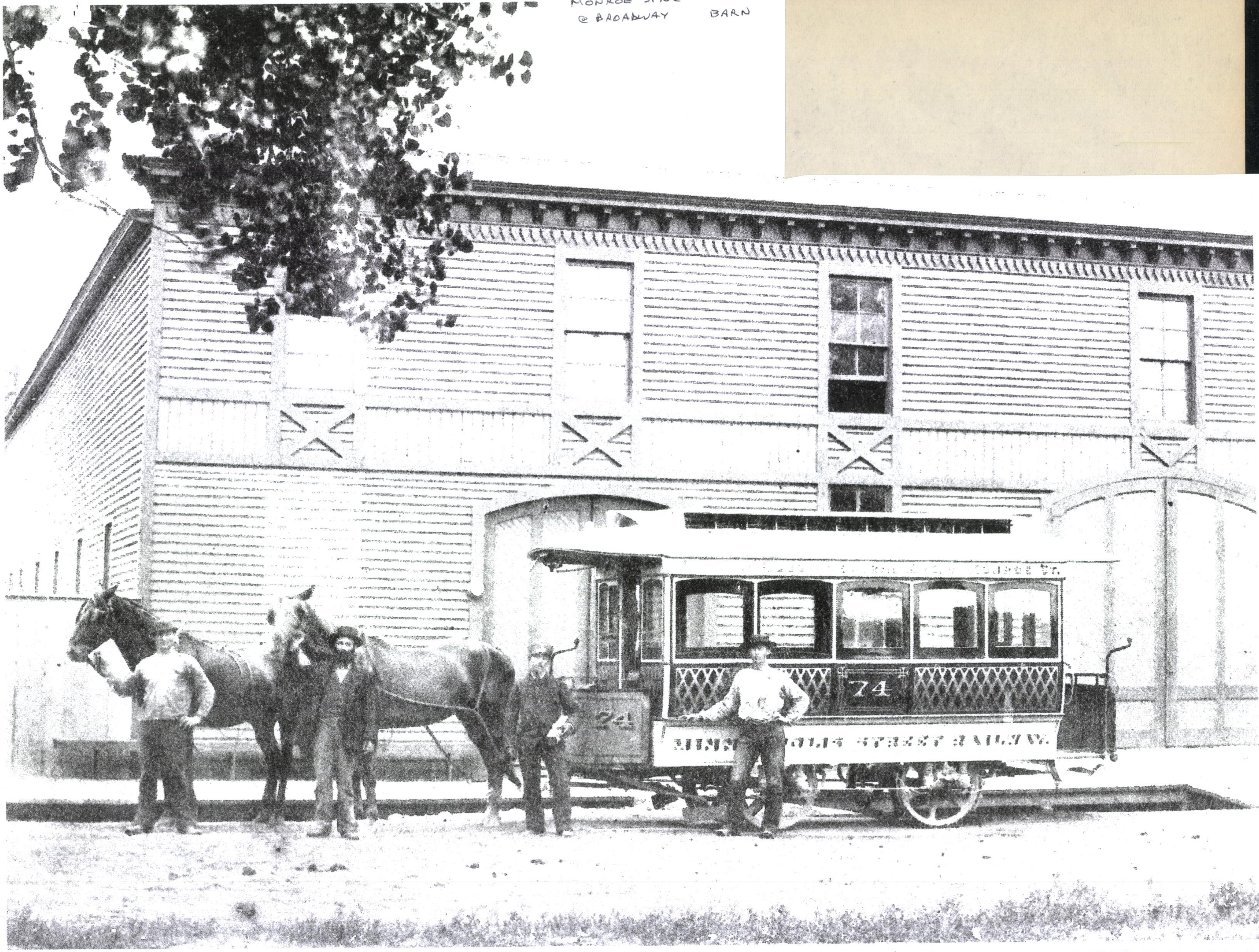
BUILDINGS
FRANKLIN AVE BARN
FRANKLIN AVE AND 16TH AVE
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO

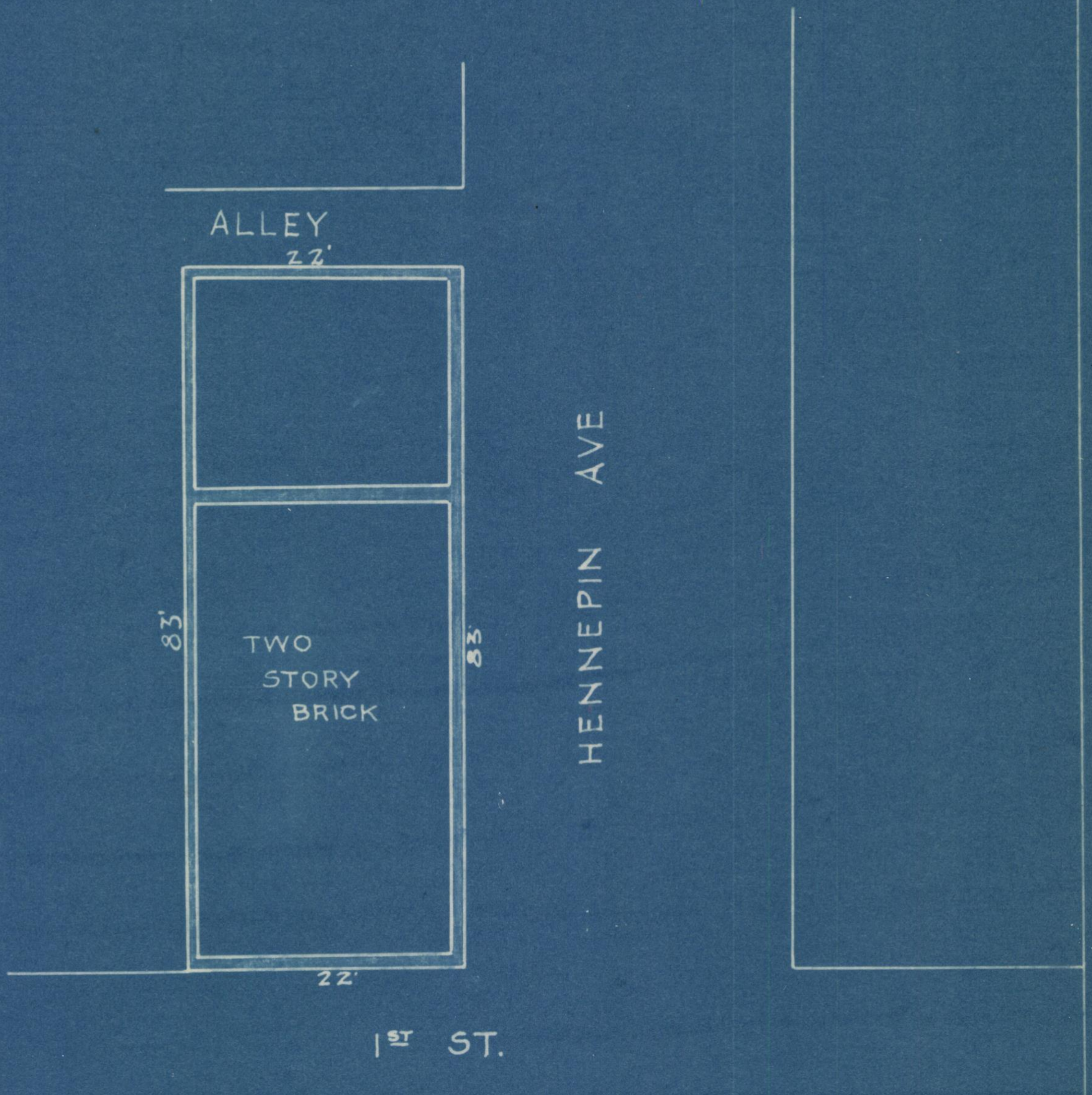
④


24TH ST
4TH AVE SO
259.8
59.5
69'
73.5
Scales
TRANSFER TABLE
CAR HOUSE
ONE STORY FRAME
200
196.5
34.9
15.5
BARN
2 STORY
FRAME
136
BARN
2 STORY
FRAME
136
200

BUILDINGS
4TH AVENUE BARN
4TH AVE. SO. AND 24TH ST.
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO

MONROE ST NE
@ BROADWAY BARN

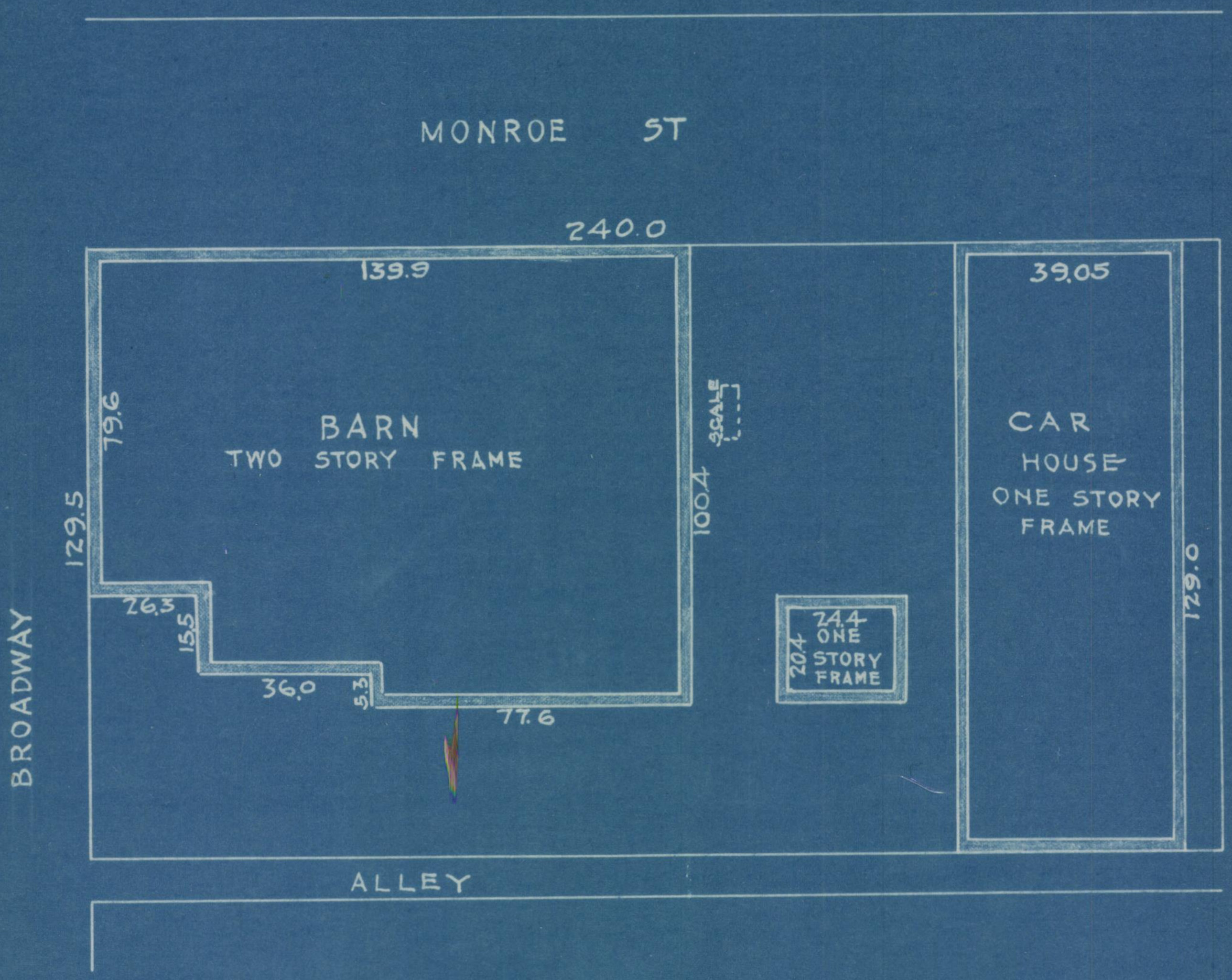

74
24
MINN OLIS STREET RAILW.


ALLEY
22'
83'
83'
TWO
STORY
BRICK
22'
HENNEPIN AVE
1ST ST.

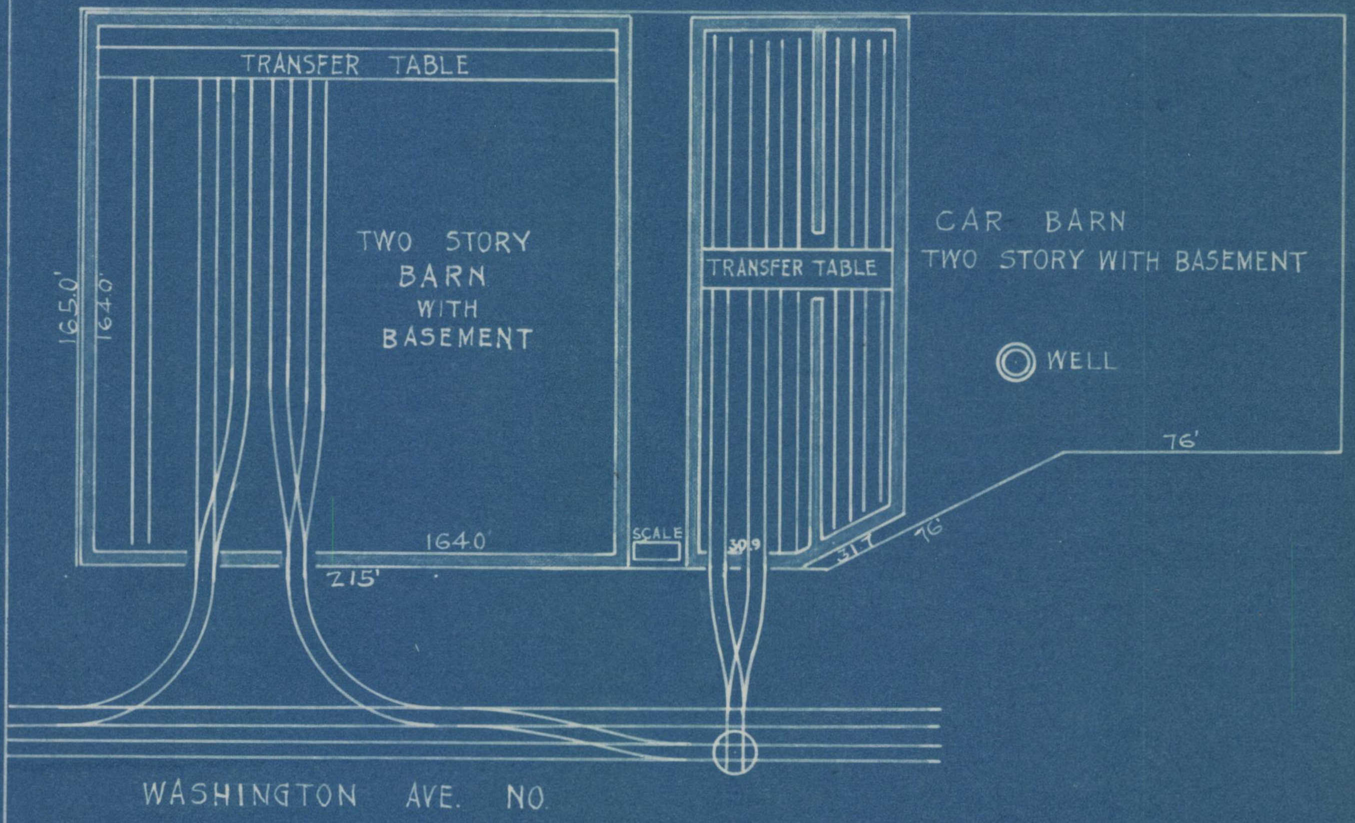
BUILDINGS

1ST STREET PROPERTY

HENNEPIN AVE AND 1ST ST.
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO


MONROE ST
240.0
139.9
39.05
BARN
TWO STORY FRAME
79.6
129.5
SCALE
100.4
CAR
HOUSE
ONE STORY
FRAME
129.0
26.3
15.5
36.0
5.3
77.6
24.4
20.4
ONE
STORY
FRAME
BROADWAY
ALLEY

BUILDINGS
MONROE ST. BARN
MONROE ST AND BROADWAY
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO


TRANSFER TABLE
TWO STORY BARN WITH BASEMENT
165.0'
164.0'
164.0'
215'
SCALE
30.9
TRANSFER TABLE
CAR BARN
TWO STORY WITH BASEMENT
WELL
76'
76'
31.7
WASHINGTON AVE. NO.

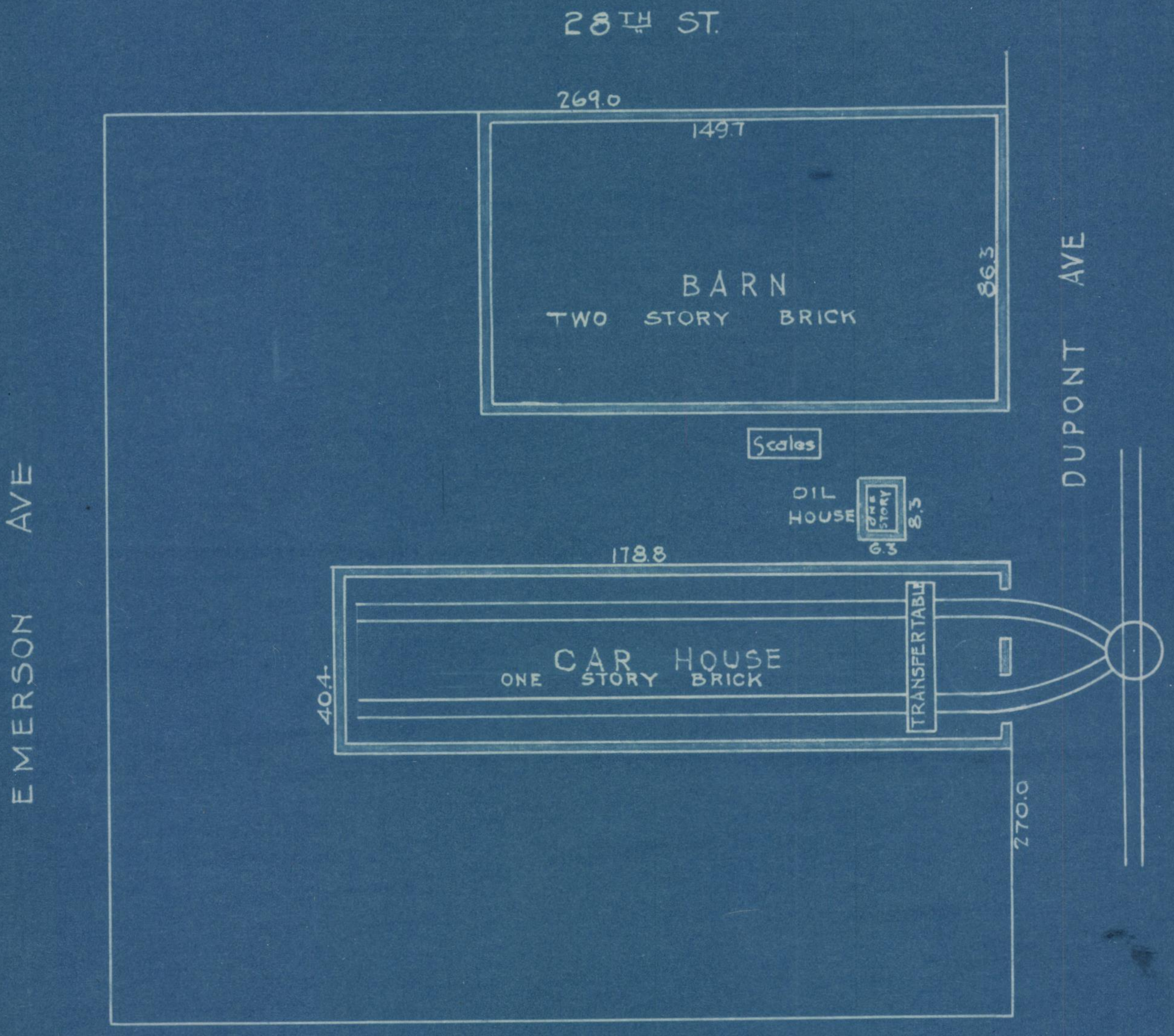
BUILDINGS

19TH AVE BARN

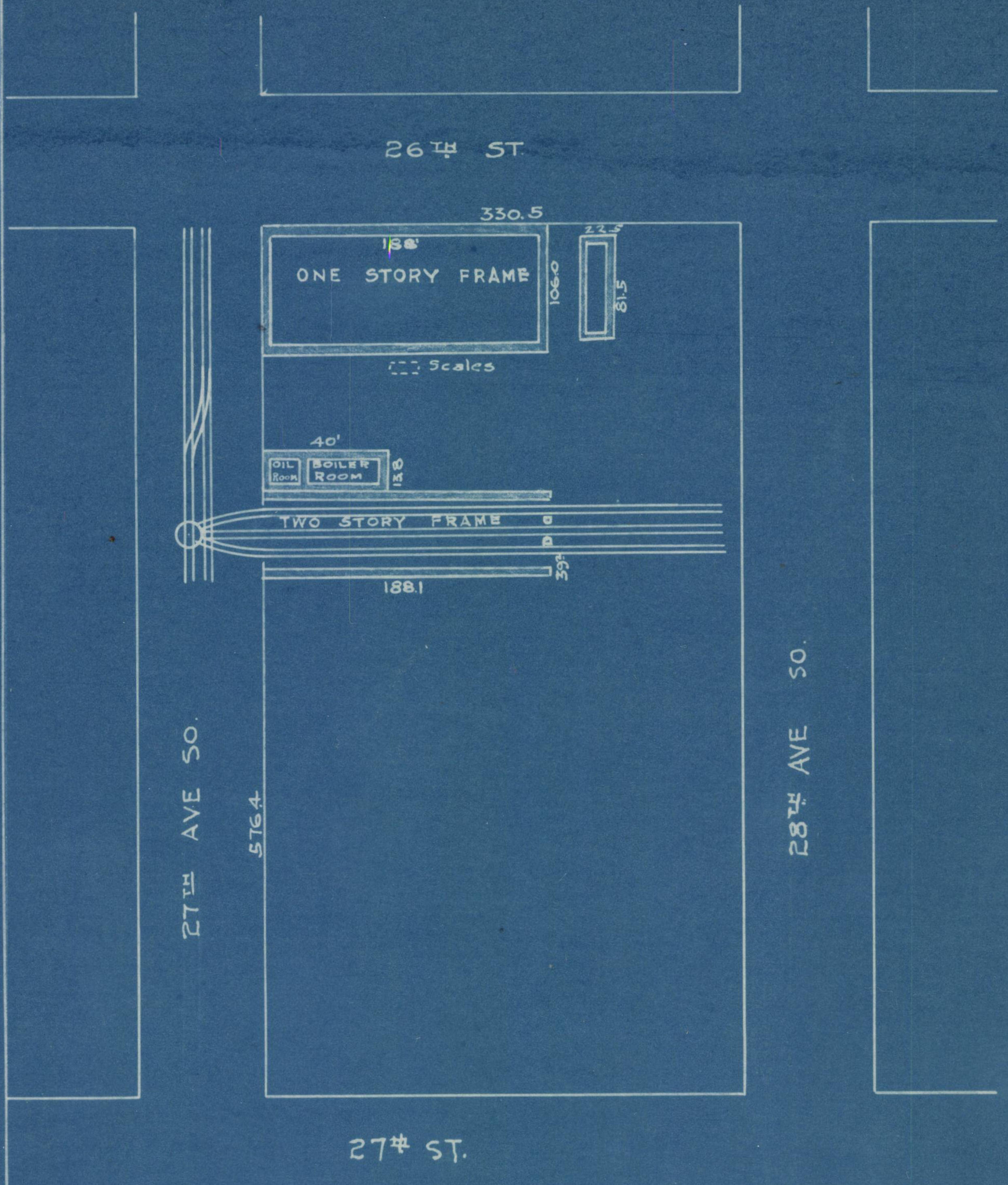
WASHINGTON AVE N. AND 19TH AVE

HORSE CAR LINES

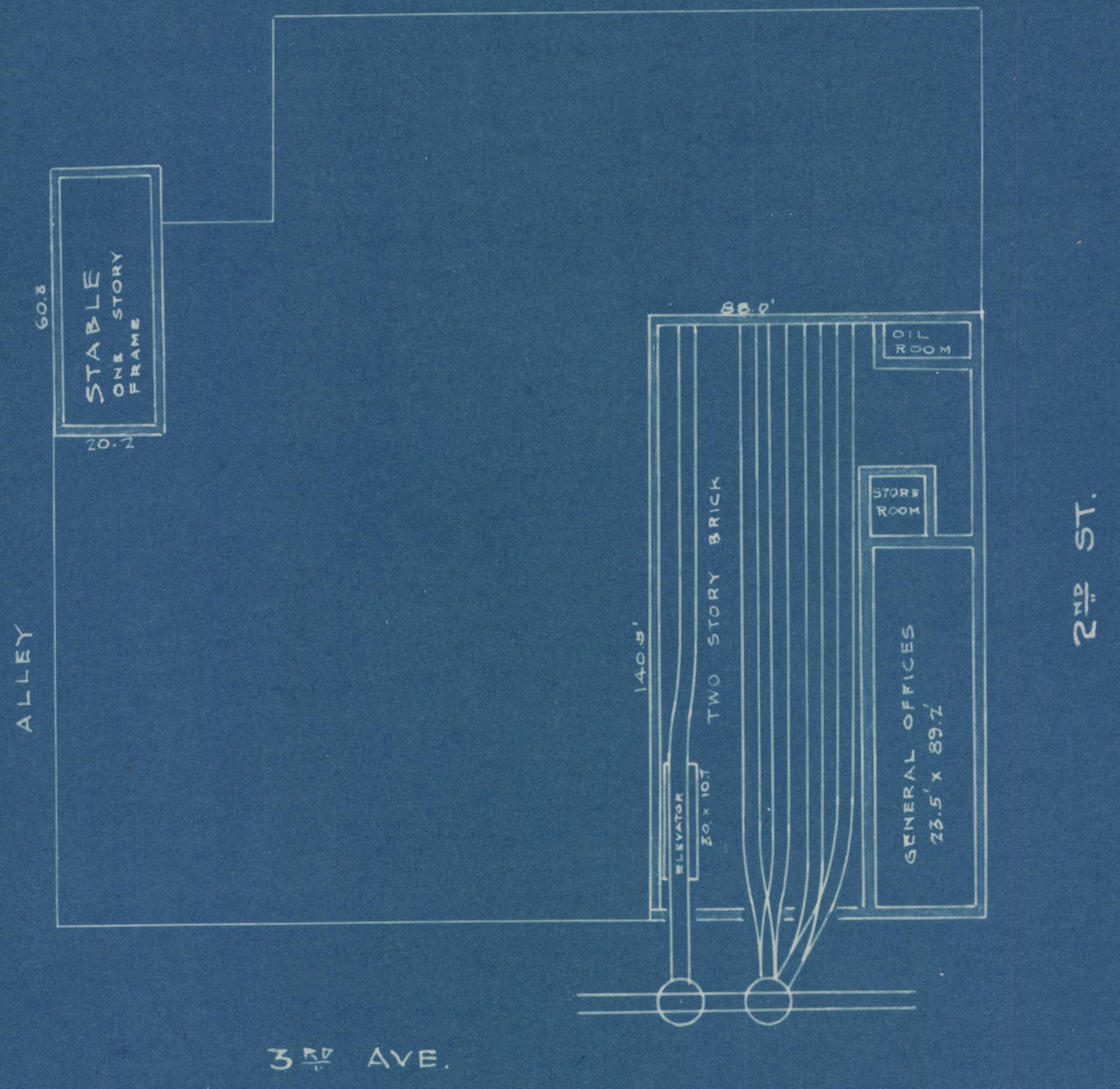
MINNEAPOLIS STREET RAILWAY CO

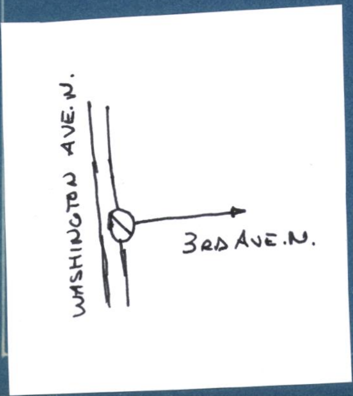

28TH ST.
269.0
149.7
BARN
TWO STORY BRICK
86.3
DUPONT AVE
Scales
OIL HOUSE
ONE STORY
8.3
6.3
178.8
CAR HOUSE
ONE STORY BRICK
40.4
TRANSFERTABLE
270.0
EMERSON AVE

BUILDINGS
WINDOM BARN
DUPONT AVE AND 28TH ST
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO.


26TH ST
330.5
188'
ONE STORY FRAME
106.0
22.5
81.5
Scales
40'
OIL ROOM
BOILER ROOM
13.8
TWO STORY FRAME
39'
188.1
576.4
27TH AVE SO.
28TH AVE SO.
27TH ST.

BUILDINGS
MINNEHAHA BARN
27TH AVE and 26TH ST.
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO


STABLE
ONE STORY
FRAME
60.8
20.2
ALLEY
88.0'
OIL ROOM
STORE ROOM
TWO STORY BRICK
140.8'
ELEVATOR
30 x 10.7
GENERAL OFFICES
23.5' x 89.2'
2ND ST.
3RD AVE.


WASHINGTON AVE. N.
3RD AVE. N.

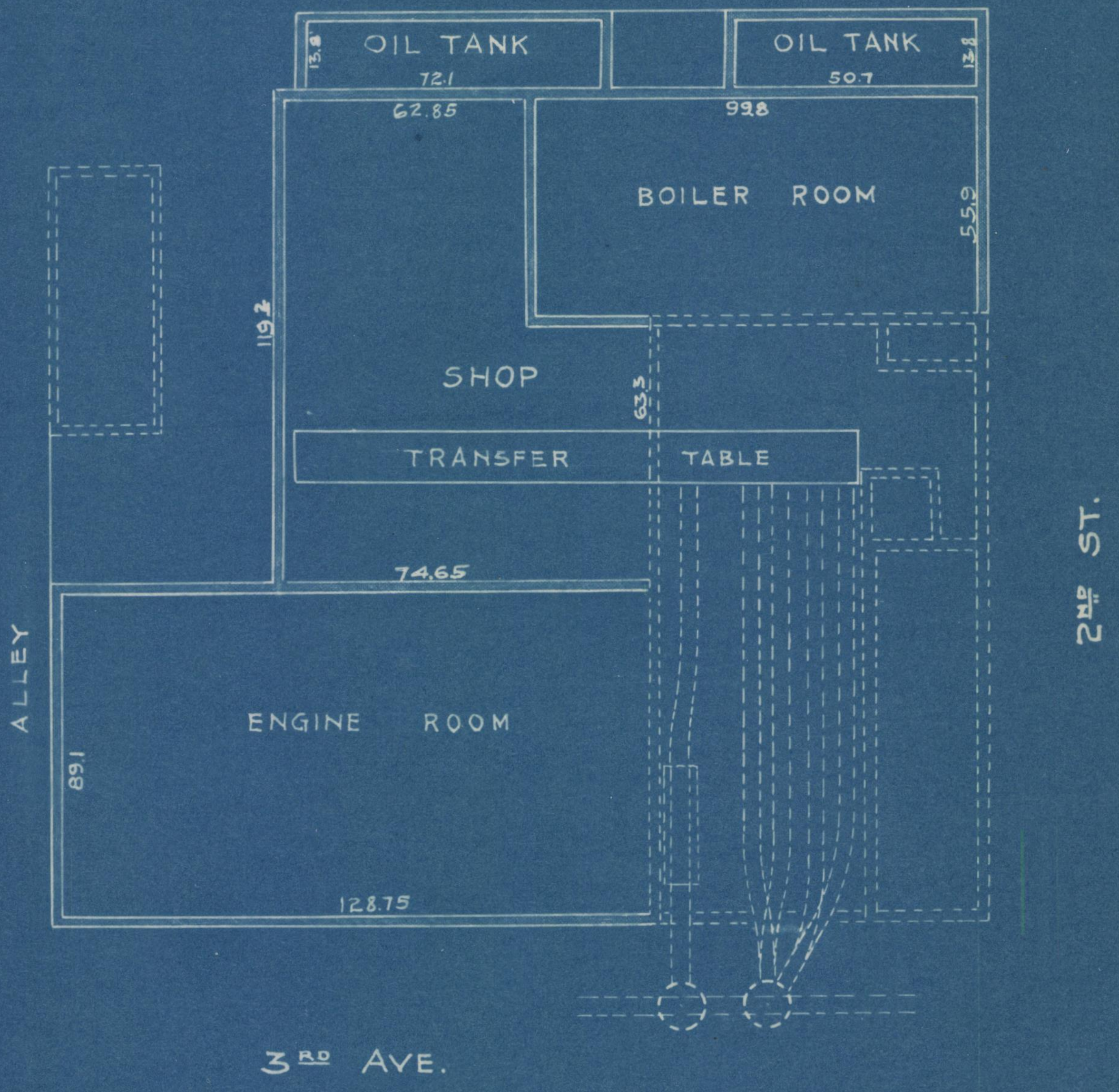
BUILDINGS

CAR BARN & GENERAL OFFICES

3RD AVE NO AND 2ND ST

HORSE CAR LINES

MINNEAPOLIS STREET RAILWAY CO


OIL TANK
13.8
72.1
OIL TANK
50.7
13.8
62.85
99.8
BOILER ROOM
55.9
119.2
SHOP
63.3
TRANSFER TABLE
74.65
ALLEY
ENGINE ROOM
89.1
128.75
2ND ST.
3RD AVE.

BUILDINGS
SHOPS & GENERAL OFFICES
3RD AVE NO. AND 2ND ST
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO

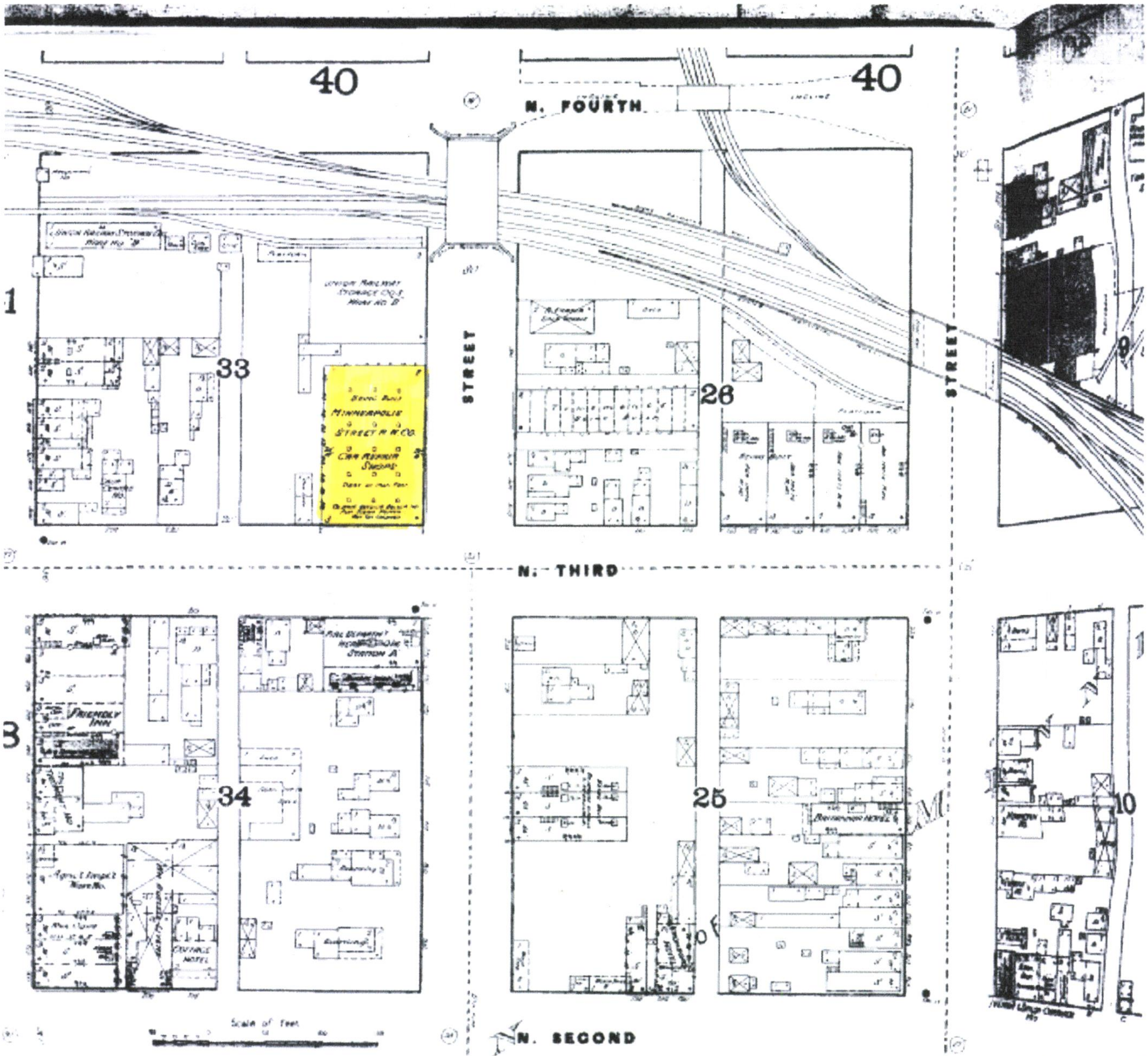
STREET RAILWAY JOURNAL
February 1893

Repair Shops

The car repair shops are located at the Third Avenue station and the iron shops at the 31st Street Station. The former are conveniently arranged with a good equipment of wood working tools, mostly of Fay's manufacture, which are located on the ground floor and operated by power from the main station. The carpenters' benches, erecting and paint shop are on the second floor. The carpenters' benches are arranged parallel to each other, to one side of the shop, and system, order and cleanliness prevail, as before noted.

A very convenient jack for raising the ends of cars is employed in this shop. One man can move and operate them, and they are frequently employed on the line for handling disabled cars. The Third Avenue station, including the car shop and offices, has recently been equipped with the Grinnell dry pipe fire sprinkling system. having 1,041 sprinklers. The water is taken from the city mains which carry sixty pounds pressure, and this is supplemented by a steam pump and reservoirs.

1885


40
40
N. FOURTH
STREET
STREET
1
33
26
MINNEAPOLIS STREET R W CO.
CAR REPAIR SHOPS
N. THIRD
3
34
25
10
FRIENDLY INN
N. SECOND
Scale of feet

MAY 1897 DIRECTORY MAP (12-31-1896?)

CARHOUSES

- Lyndale
- Bloomington
- Minnehaha
- 19th Ave.
- East Side

- Midway
- Ramsey St.
- Rice St.
- Greenbrier
- East 7th St.

PROPERTIES

- 4th Ave.
- 8th Ave.
- Broadway
- Monroe St.
- University
- Franklin Ave.
- First St.
- Grant St.
- Forest Heights

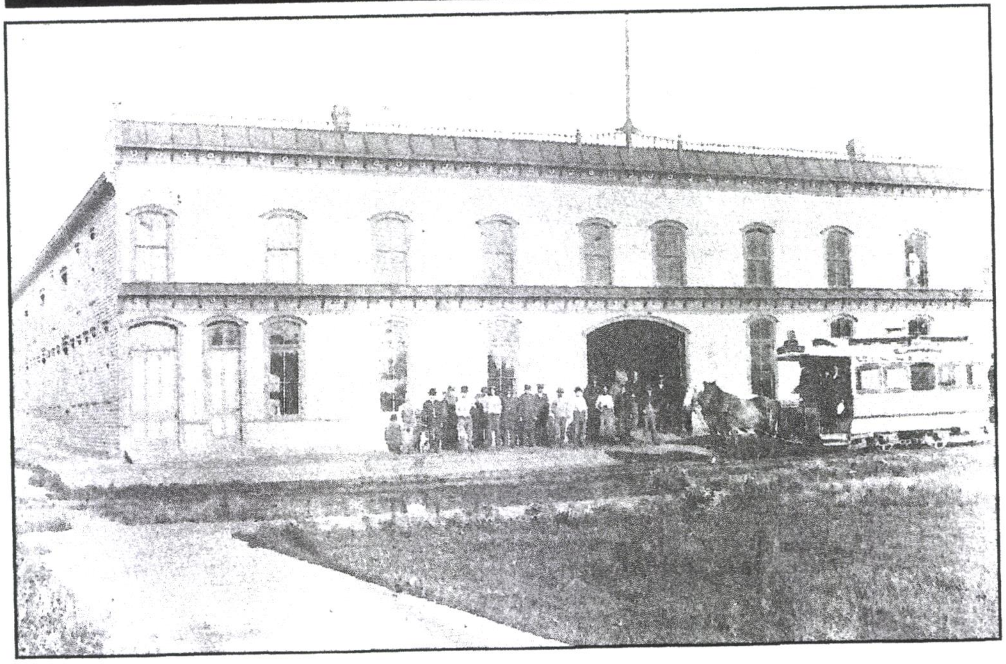
- Kent St.
- Rondo St.
- Laurel Ave.
- West 7th St.
- St.Peter St.
- East 7th St.

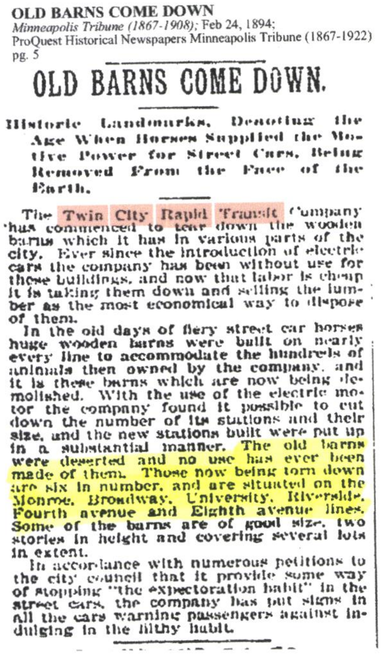
POWERHOUSES

- Powerhouse #1 and General Office
- Powerhouse #2, Car Shops, Storehouse, and Carhouse

- Hill St. Powerhouse
- Selby Ave. Powerhouse

The Minnehaha barn, located on 27th Avenue S. at 26th Street.





OLD BARNS COME DOWN
Minneapolis Tribune (1867-1908); Feb 24, 1894;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 5

OLD BARNS COME DOWN.

Historic Landmarks, Denoting the Age When Horses Supplied the Motive Power for Street Cars, Being Removed From the Face of the Earth.

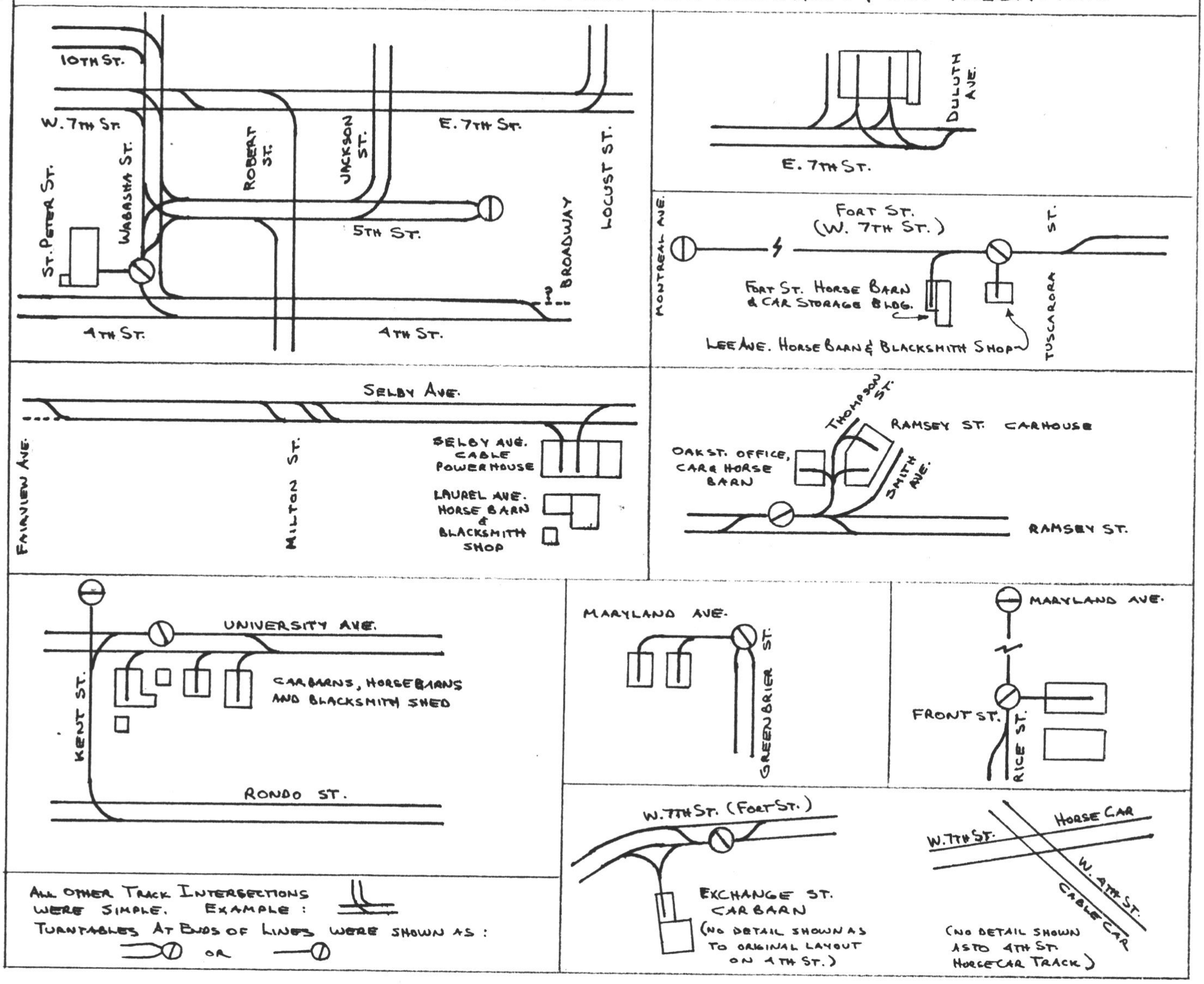
The Twin City Rapid Transit Company has commenced to tear down the wooden barns which it has in various parts of the city. Ever since the introduction of electric cars the company has been without use for these buildings, and now that labor is cheap it is taking them down and selling the lumber as the most economical way to dispose of them.

In the old days of fiery street car horses huge wooden barns were built on nearly every line to accommodate the hundreds of animals then owned by the company, and it is these barns which are now being demolished. With the use of the electric motor the company found it possible to cut down the number of its stations and their size, and the new stations built were put up in a substantial manner. The old barns were deserted and no use has ever been made of them. Those now being torn down are six in number, and are situated on the Monroe, Broadway, University, Riverside, Fourth avenue and Eighth avenue lines. Some of the barns are of good size, two stories in height and covering several lots in extent.

In accordance with numerous petitions to the city council that it provide some way of stopping "the expectoration habit" in the street cars, the company has put signs in all the cars warning passengers against indulging in the filthy habit.

ST. PAUL CITY RY. TRACK DETAILS

HORSECAR AND CABLECAR TRACK- PER A.L. DRUM & CO. VALUATION


10TH ST.
W. 7TH ST.
E. 7TH ST.
ST. PETER ST.
WABASHA ST.
ROBERT ST.
JACKSON ST.
5TH ST.
BROADWAY
LOCUST ST.
4TH ST.
4TH ST.
DULUTH AVE.
E. 7TH ST.
FORT ST. (W. 7TH ST.)
MONTREAL AVE.
TUSCARORA ST.
FORT ST. HORSE BARN & CAR STORAGE BLDG.
LEE AVE. HORSE BARN & BLACKSMITH SHOP
SELBY AVE.
FAIRVIEW AVE.
MILTON ST.
SELBY AVE. CABLE POWERHOUSE
LAUREL AVE. HORSE BARN & BLACKSMITH SHOP
THOMPSON ST.
RAMSEY ST. CARHOUSE
OAK ST. OFFICE, CAR & HORSE BARN
SMITH AVE.
RAMSEY ST.
UNIVERSITY AVE.
KENT ST.
CARBARNS, HORSEBARNS AND BLACKSMITH SHED
RONDO ST.
MARYLAND AVE.
GREENBRIER ST.
MARYLAND AVE.
FRONT ST.
RICE ST.
W. 7TH ST. (FORT ST.)
EXCHANGE ST. CARBARN
(NO DETAIL SHOWN AS TO ORIGINAL LAYOUT ON 4TH ST.)
W. 7TH ST.
HORSE CAR
W. 4TH ST.
CABLE CAR
(NO DETAIL SHOWN AS TO 4TH ST. HORSECAR TRACK)
ALL OTHER TRACK INTERSECTIONS WERE SIMPLE. EXAMPLE:
TURNTABLES AT ENDS OF LINES WERE SHOWN AS:
OR

HORSECAR BARNS

St.PAUL STREET RAILWAY

Exchange Street Barn
1872-1879

Northeast corner of W. 3rd St. and Exchange St., along Exchange St. to 4th St. Real estate: 48' x 198' between 3rd and 4th Streets, on the east side of Exchange St., acquired July 1, 1872. Two-story brick building, 25' x 200', built during 1872. Disposed of between 1879 and 1882. Another source says the property was still owned in 1893 but had been disposed of by 1897 when a list was compiled of the real estate owned.

4th Street Barn
1875-1879

Real estate: Lot 4, Block 22, St.Paul Proper, located on the south side of 4th St. between Wabasha St. and St.Peter St. Lot size was 50' x 150'. Horsecar Barn, one-story and basement, 38' x 150', completed May 1875. Used as a stable only, no trackage. By 1879 it was considered a poor building with a damp basement, but at a better location than the Exchange Street Barn. Disposed of between 1879 and 1882.

St.PAUL CITY RAILWAY

All measurements were taken from the A. L. Drum & Company Valuation Report dated 1-1-1920 as none appeared in the Trumbull 1-18-1893 Report.

St.Peter Street Barn
1879-1884

Real estate: Lots 6 and 7, Block 21, St.Paul Proper, were acquired 12-6-1878. Each lot measured 50' x 150' for a combined area of 50' x 300' located on the east side of St.Peter St. between 4th and 5th Streets.

A two-story brick building designed by architect George Wirth, was completed May 1879 on the 4th and St.Peter Streets corner of the property for use as an office and stable. The office address was 15 W. 4th Street. During 1879-1880 double track for access was authorized to be laid from the corner of either (1) 4th and St.Peter Streets, or (2) 5th and Wabasha Streets.

A 45' extension to this building plus the addition of a third story was authorized by the board of directors 10-24-1879 for completion during 1880. The third story was for the storage of grain and hay.

A three-story brick building, 50' x 109', also designed by architect George Wirth, was built on the 5th and St.Peter Streets corner of the property during 1880, extending back nearly to the rear of the 1879 building. This new building housed the company's 36 horsecars, repair shops, offices, turntable, and dormitory for drivers and conductors. In the narrow space between the two buildings was located the steam-operated elevator for lifting horsecars to the second floor. Another source reported that the ground floor housed 30 cars and 150 horses, the second floor the general offices, blacksmith and repair shops, and the third floor employees' sleeping rooms.

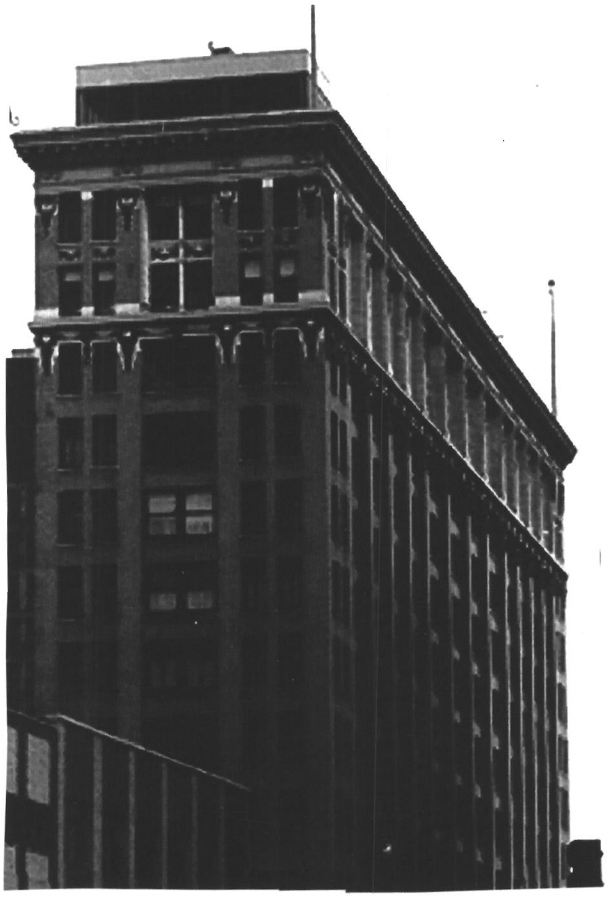
This facility was replaced by the Smith Ave. complex during 1884. The buildings were leased 1-29-1885 to Samuel G. Dickinson for ten years from 4-1-1885. Architect L. S. Buffington designed modifications to convert the buildings into a department store.

During 1889 Thomas Lowry began purchasing real estate on the block between Wabasha and St.Peter Streets, and 4th and 5th Streets from the estate of W. F. Davidson, a real estate speculator who owned numerous parcels of real estate in downtown St.Paul. Lowry purchased five lots in the block for $180,000. The Arcade Investment Company was organized in 1891 by Thomas Lowry.

The Ramsey County Historical Society says that the Dickinson department store building(s) were destroyed by fire in 1890. SPCR real estate records show that Thomas Lowry purchased the real estate from St.Paul City Ry. on 9-18-1890 for $100,000. According to RCHS in 1892 a building between 4th and 5th Streets with entrances on both streets appeared in the St.Paul City Directory. It was named the Lowry Arcade and housed numerous offices of doctors and dentists. According to Donnelly's 1892 Atlas just west of this structure, facing St.Peter St., was a department store.

Thomas Lowry died in 1909 and his son Horace took over many aspects of his father's business. Among these was the Arcade Investment Company. In 1910 Horace Lowry began to develop the block in downtown St.Paul his father had purchased. The structure on St.Peter St. was razed for the construction of a new 7-story office building on Lots 3-5 and 8-10, financed by the Arcade Investment Company. Office space was in great demand in St.Paul so the new building was specially planned for the medical profession. Even before the old Lowry Arcade Building was razed applications for all the proposed office space had been received. After construction began, applications continued to such an extent that it was decided to add five more stories to bring the building to twelve stories.

Construction began in 1910 by the Wells Bros. Construction Co. of Chicago, and was completed in 1911. The building cost $750,000. The building had a frontage of 300 ft. with only a 50 ft. depth. On the street level was space for eleven stores as well as entry space for the St.Peter St. entrance of the Field Schlick Co.. The building was constructed of reinforced concrete with marble terrazo on the 12,000 sq. ft. on each floor. The partitions were of terra cotta tile and so arranged that they could be removed so that each of the 24 sections of offices on each floor could be made into suites of three or four sections. The storefronts were made of plate glass and polished granite. The upper portions of the building used glazed Tennessee brick and white terra cotta. Reserve water tanks were located on the roof and compressed air machinery in the basement for the needs of physicians and dentists.



Horace Lowry died in 1931 but the building remained in the hands of the Arcade Investment Co. (which had a number of owners, many of them Lowry descendents) until 1965 when it was sold to Brooks Harvey & Company of New York.

7-22-1890 Newspaper
SPCR will occupy the
entire 2nd floor of
Thomas Lowry's Arcade
Building on the
Wabasha St side

St.PAUL CITY RAILWAY HORSECAR BARNS

Compiled from Minneapolis Tribune Articles

10-18-1880: There are two three-story substantial brick buildings on St.Peter St. from 4th to 5th Streets, occupying a space of 50 ft. x 100 ft., all under one roof. The building fronting on 4th St., first and second floors, is occupied by the horses, except that there is a waiting room for passengers at the street corner on the first floor, and the manager's office over it is on the second floor, both neatly furnished rooms. The third story of this building is for the storing and handling of hay, feed and grain for the horses. Between the two buildings, on the St.Peter St. side, in front of the covered and enclosed passageways connecting the buildings, is a large hoisting platform for raising cars to the second story of the car building and for raising feed and hay to the third story of the stable building. Farmers who bring loads of hay to the stables follow directions to drive onto the platform and unhitch the horses. The platform is hoisted up until the farmer can pitch the hay downward into the hay loft. The elevator is at present worked by hand power, but with it two men can hoist at the same time a streetcar and wagon loaded with hay. The second, or car building, provides on the first floor track room sheltering all the cars at night. A blacksmith shop on the same floor does all the horse-shoeing and all the iron work for repairs of the company. The second floor is devoted to car repairs and car painting; and the third floor is taken up with the sleeping rooms and assembly room of the employees, while on the roof provision is mde for airing and drying their clothes.

2-11-1886: At 4:15 yesterday morning a fire broke out in the central barn at the corner of Ramsey and Forbes Streets. The fire is supposed to have originated in the carpenter shop in the second story. The building was of frame, two stories high, constructed in three sections, each being separated by a strong fire wall. The fire department confined the flames to the center, or second section, which was however totally destroyed, together with its contents. In the carhouse there were either 24 or 25 cars which were consumed. The other two sections were saved, and the livestock was all rescued. The building was poorly constructed; the Forbes St. wall fell outward long before the stringers, which should have supported it, were burned away. The cars burned were valued at from $700 to $800 each, making a loss on rolling stock of from $18,000 to $20,000. The insurance is as follows: on the carhouse $8,140; on cars and other contents of carhouse $14,810. Total $22,950. The streetcar lines are running as usual except the West 7th Street line is two cars short.

Kent St., or University, Barn
1882-1891?

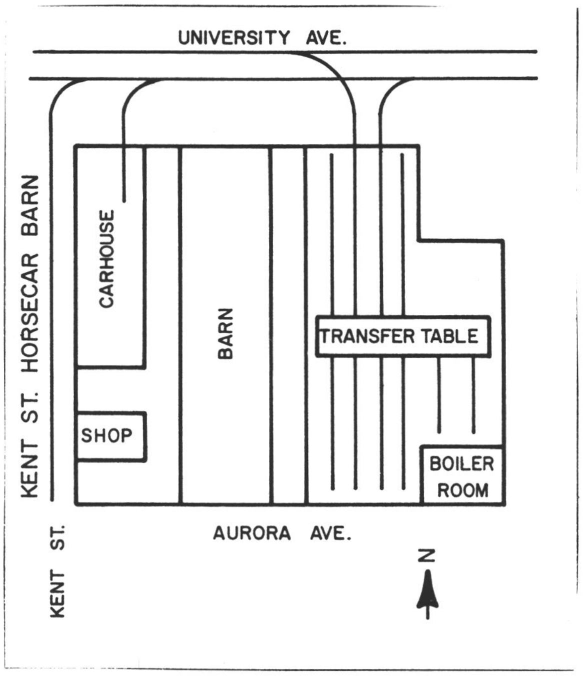
Real estate: the block bounded by Kent St., University Ave., Mackubin St. and Aurora Ave. Lots 10-14, 17-20 and 22, Block 3, were acquired April-May 1882. Lot 21, Block 3, was acquired inMay 1884.

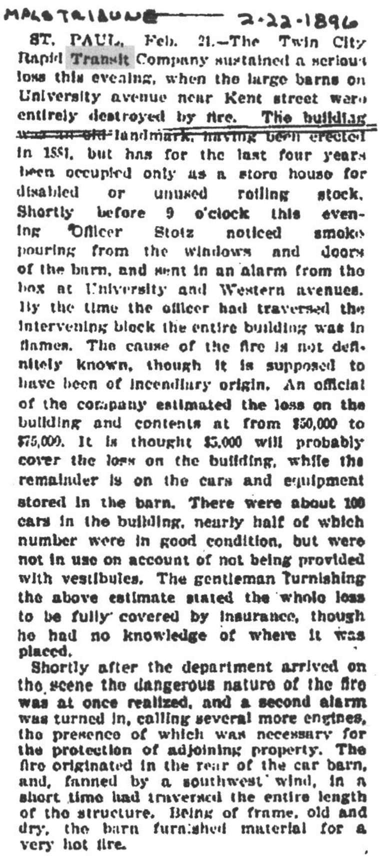
Measurements:

University Ave. and Kent St.		
Carhouse		40' x 210'
Horse Barn		80' x 210'
Blacksmith Shop		20' x 40'
South side of University Ave. between Kent St. and Mackubin St.		
Horse Barn	one-story, frame	14' x 87'
Horse Barn	one-story, frame	36'11" x 96'
North side of Aurora Ave. between Kent St. and Mackubin St.		
Carhouse	one-story, frame	70'6" x 62'
South side of University Ave., north side of Aurora Ave., between Kent St. and Mackubin St.		
Carhouse	one-story, frame	50' front, 78' rear x 244'

After electrification of the horsecar system this facility was used only for storage of unused and disabled electric cars. When the "East 7th Street" cable line was electrified in 1893 cable equipment and supplies were placed in storage here. The buildings were destroyed by fire in ~~1895~~ 2-21-1896 along with approximately 100 cars that were in storage.

Lots 11-12 were sold in June 1905. The remaining lots were sold in November 1907 to the Arcade Investment Company.




MPLS TRIBUNE ——— 2-22-1896

ST. PAUL, Feb. 21.—The Twin City Rapid Transit Company sustained a serious loss this evening, when the large barns on University avenue near Kent street were entirely destroyed by fire. The building ~~was an old landmark, having been erected~~ in 1881, but has for the last four years been occupied only as a store house for disabled or unused rolling stock. Shortly before 9 o'clock this evening Officer Stotz noticed smoke pouring from the windows and doors of the barn, and sent in an alarm from the box at University and Western avenues. By the time the officer had traversed the intervening block the entire building was in flames. The cause of the fire is not definitely known, though it is supposed to have been of incendiary origin. An official of the company estimated the loss on the building and contents at from $50,000 to $75,000. It is thought $5,000 will probably cover the loss on the building, while the remainder is on the cars and equipment stored in the barn. There were about 100 cars in the building, nearly half of which number were in good condition, but were not in use on account of not being provided with vestibules. The gentleman furnishing the above estimate stated the whole loss to be fully covered by insurance, though he had no knowledge of where it was placed.

Shortly after the department arrived on the scene the dangerous nature of the fire was at once realized, and a second alarm was turned in, calling several more engines, the presence of which was necessary for the protection of adjoining property. The fire originated in the rear of the car barn, and, fanned by a southwest wind, in a short time had traversed the entire length of the structure. Being of frame, old and dry, the barn furnished material for a very hot fire.

April 1889 Laurel Ave. Barn not included in list of barns affected by the strike.

Laurel Ave. Barn
1882?-1891?

Real estate: Lots 7-11, Block 7; no acquisition dates recorded. Supposedly built during 1882; definitely in operation as of 1884.

Measurements:

East side of Dale St. between Laurel Ave. and Ashland Ave.		
Dale St. Horse Barn	one-story, frame	105' x 27'
South side of Laurel Ave. between Kent St. and Dale St.		
Laurel Ave. Barn		
Horse Barn	two-story, frame	70' x 120'
Carhouse	one-story, frame	50' x 140'
Blacksmith Shop	one-story, frame	20' x 24'
Horse Barn Addition	one-story, frame	50' x 60'

Deeded 7-8-1898 to William G. Peet in partial payment for capital stock of the St.Paul & Suburban Railway.

West 7th St. (Fort St.) Barn
1883-1891

Real estate: Lots 1-6 and 18-20, Block 12; seven (six?) lots acquired February 1883, two lots October 1883, and one lot May 1884.

Measurements

Fort St.		
W. 7th St. and Lee Ave.		
Horse Barn	two-story	40' W. 7th St./160' Lee Ave. x 110'
South side of W. 7th St. between Lee Ave. and Tuscarora St.		
Carhouse	one-story, frame	40' x 110'
Lee Ave.		
West side of Lee Ave. between W. 7th and Bay Streets		
Horse Barn	one-story, frame	70' x 116'
South side of Lee Ave. between Bay and View Streets		
Blacksmith Shop addition	one-story, frame	25' x 20'

Destroyed by fire December 1891 along with 23 out of service horsecars. Real estate sold October 1907 to E. B. Vandervater.

Grand Ave. Barn
~~1888~~-1892
1890

Real estate: the real estate record book contains no legal description or acquisition dates.

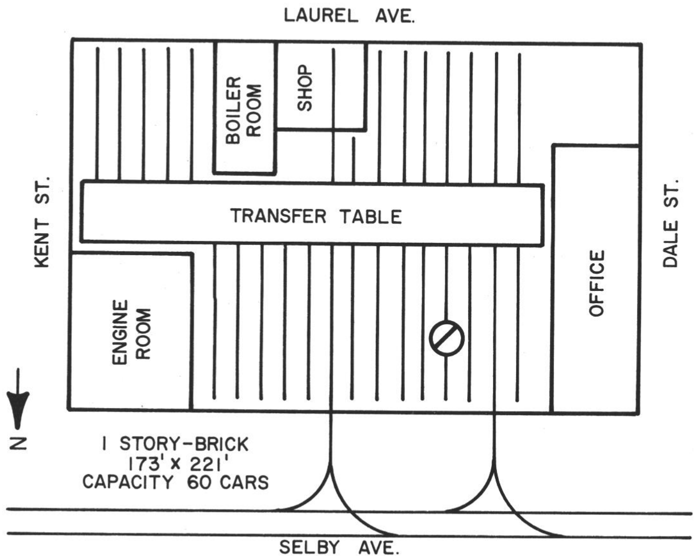
Measurements

North side of Grand Ave. between Victoria and Avon Streets		
Car Shed	one-story, frame	40' x 150'
Office	one-story, frame	20' x 15'

~~Also~~ Used for operation of the first electric cars on Grand Ave. February 1890. Buildings completely destroyed by fire October 8, 1892.

ST. PAUL CITY RY.

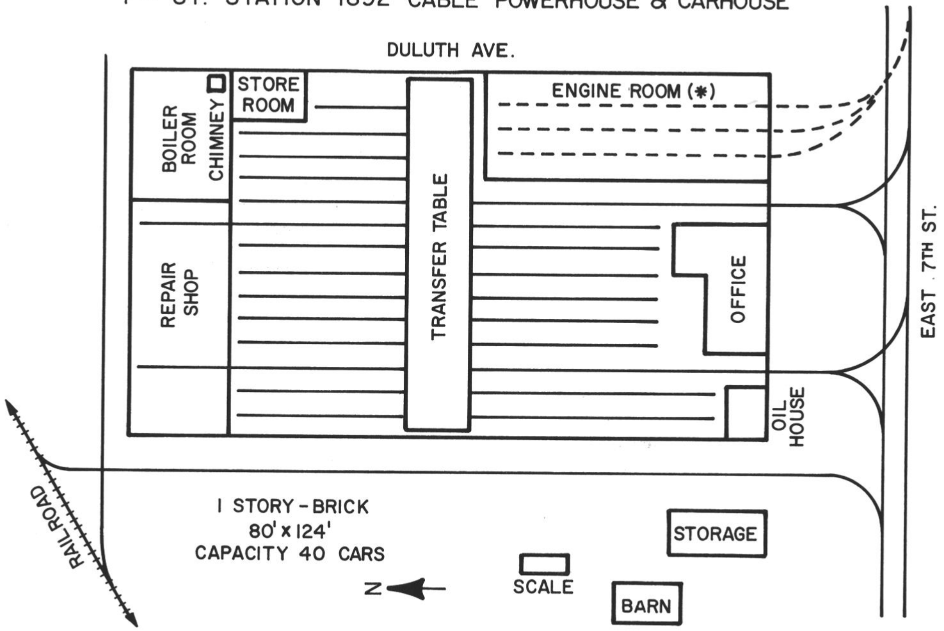
SELBY CABLE POWERHOUSE - CABLE CAR HOUSE
STREETCAR HOUSE
1892


LAUREL AVE.
BOILER ROOM
SHOP
TRANSFER TABLE
KENT ST.
DALE ST.
OFFICE
ENGINE ROOM
N
SELBY AVE.

1 STORY - BRICK
173' x 221'
CAPACITY 60 CARS

ST. PAUL CITY RY.

7TH ST. STATION 1892 CABLE POWERHOUSE & CARHOUSE

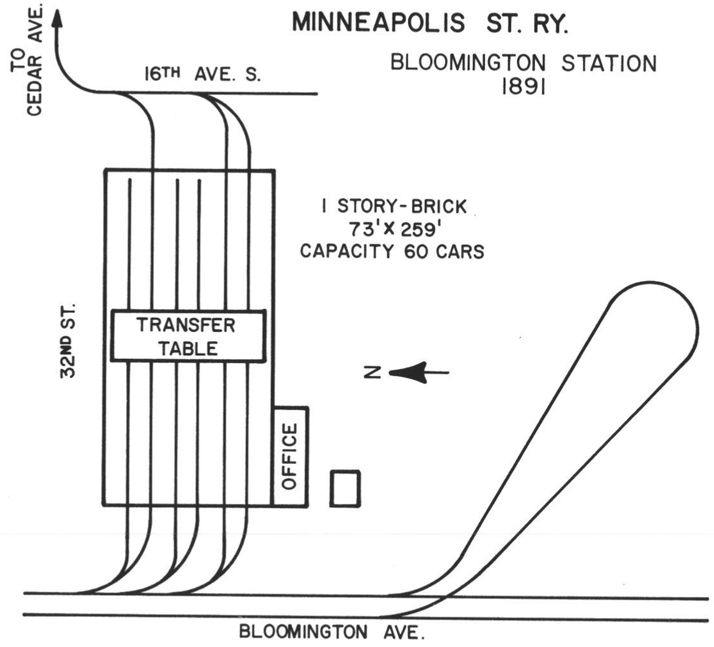

DULUTH AVE.
BOILER ROOM
CHIMNEY
STORE ROOM
ENGINE ROOM (*)
TRANSFER TABLE
REPAIR SHOP
OFFICE
OIL HOUSE
EAST 7TH ST.
RAILROAD
STORAGE
SCALE
BARN
N

1 STORY - BRICK
80' x 124'
CAPACITY 40 CARS

(*) WHEN E. 7TH ST. CABLE LINE WAS ELECTRIFIED IN 1893, THE ENGINE ROOM MACHINERY WAS REMOVED AND TRACKS INSTALLED AS INDICATED BY DOTTED LINES.

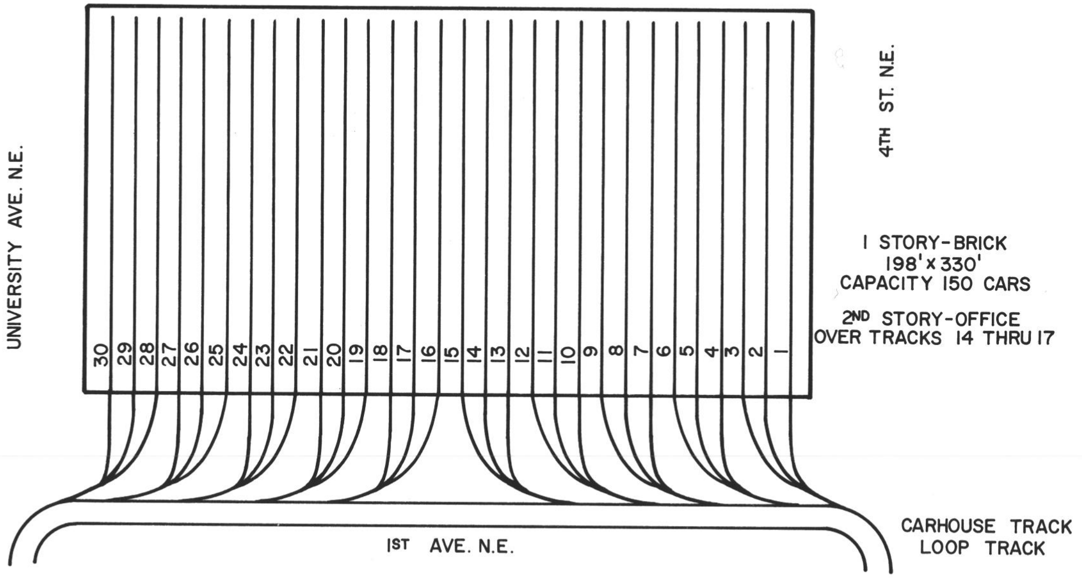
MINNEAPOLIS ST. RY.

BLOOMINGTON STATION
1891


TO CEDAR AVE.
16TH AVE. S.
32ND ST.
TRANSFER TABLE
OFFICE
N
BLOOMINGTON AVE.

1 STORY - BRICK
73' x 259'
CAPACITY 60 CARS

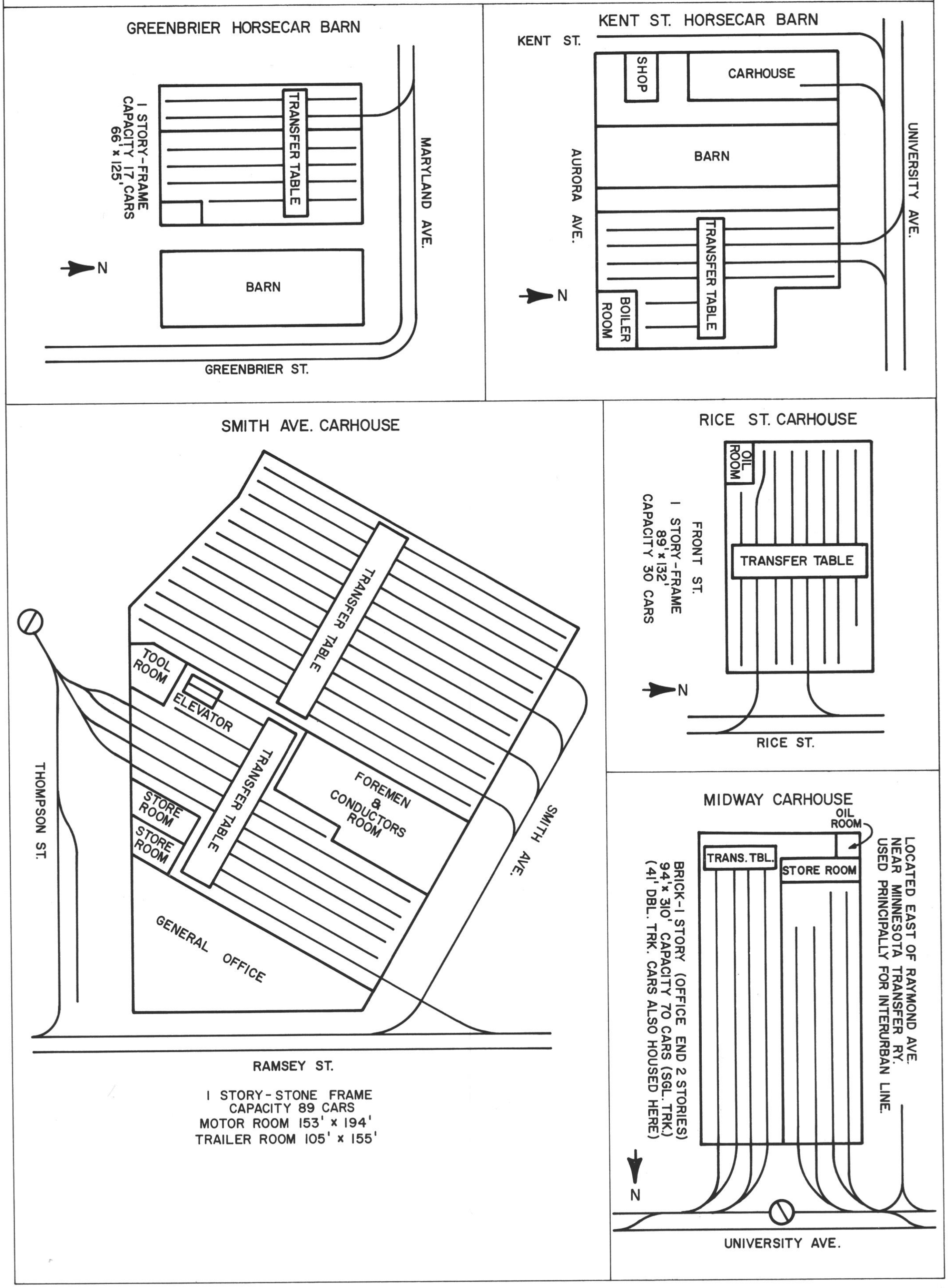
MINNEAPOLIS ST. RY. EAST MINNEAPOLIS STATION 1891


UNIVERSITY AVE. N.E.
4TH ST. N.E.
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
1ST AVE. N.E.
CARHOUSE TRACK
LOOP TRACK

1 STORY - BRICK
198' x 330'
CAPACITY 150 CARS

2ND STORY - OFFICE
OVER TRACKS 14 THRU 17

ST. PAUL CITY RY. HORSECAR BARNS AND CARHOUSES 1892



GREENBRIER HORSECAR BARN

1 STORY-FRAME
CAPACITY 17 CARS
66' x 125'

TRANSFER TABLE
BARN
MARYLAND AVE.
GREENBRIER ST.
N

KENT ST. HORSECAR BARN

KENT ST.
SHOP
CARHOUSE
BARN
AURORA AVE.
UNIVERSITY AVE.
TRANSFER TABLE
BOILER ROOM
N

SMITH AVE. CARHOUSE

1 STORY-STONE FRAME
CAPACITY 89 CARS
MOTOR ROOM 153' x 194'
TRAILER ROOM 105' x 155'

TRANSFER TABLE
TOOL ROOM
ELEVATOR
TRANSFER TABLE
FOREMEN & CONDUCTORS ROOM
STORE ROOM
STORE ROOM
GENERAL OFFICE
THOMPSON ST.
SMITH AVE.
RAMSEY ST.

RICE ST. CARHOUSE

1 STORY-FRAME
89' x 132'
CAPACITY 30 CARS

OIL ROOM
TRANSFER TABLE
FRONT ST.
RICE ST.
N

MIDWAY CARHOUSE

LOCATED EAST OF RAYMOND AVE.
NEAR MINNESOTA TRANSFER RY.
USED PRINCIPALLY FOR INTERURBAN LINE.

BRICK-1 STORY (OFFICE END 2 STORIES)
94' x 310' CAPACITY 70 CARS (SGL. TRK.)
(41' DBL. TRK. CARS ALSO HOUSED HERE)

OIL ROOM
TRANS. TBL.
STORE ROOM
N
UNIVERSITY AVE.

Smith Ave. (Oak St.) Office and Barn
1884-1911

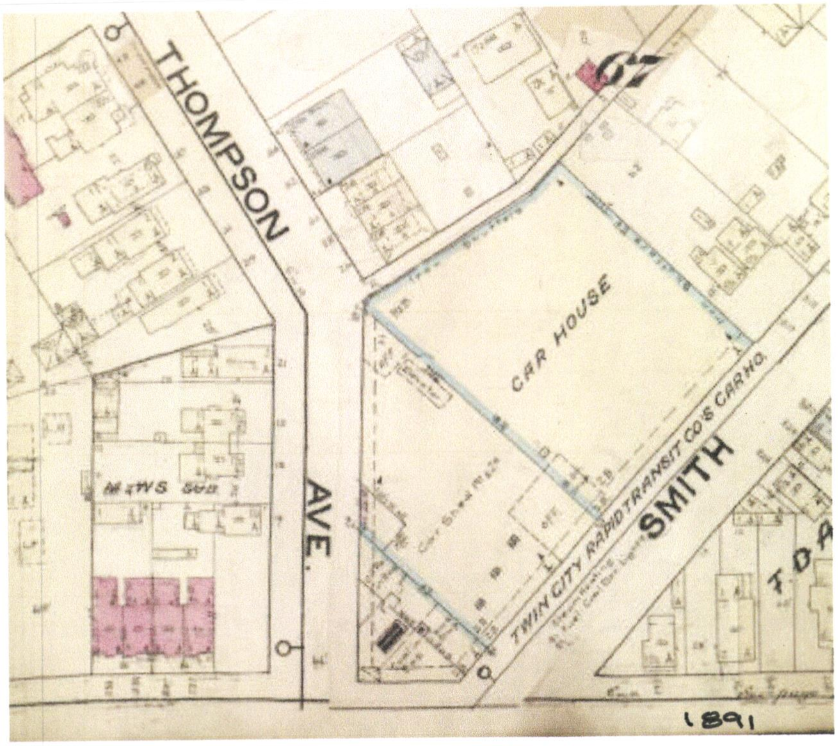
Street names are as listed in the A. L. Drum & Company Valuation Report. Apparently some renaming and relocation subsequently occurred.

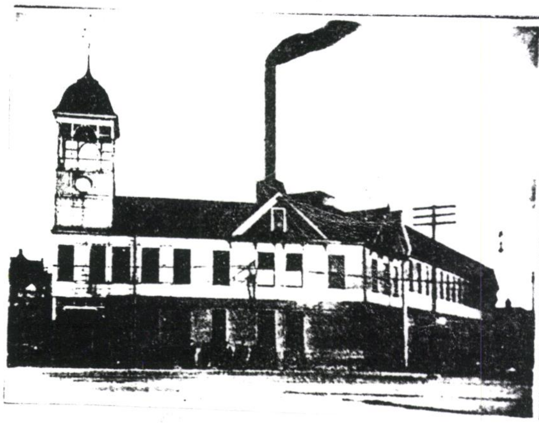
Real estate: Lots 10-14, Blocks 16-17 (later Block 67), Dayton & Irvine's Addition, recorded July 1884. The facility was in service during 1884.

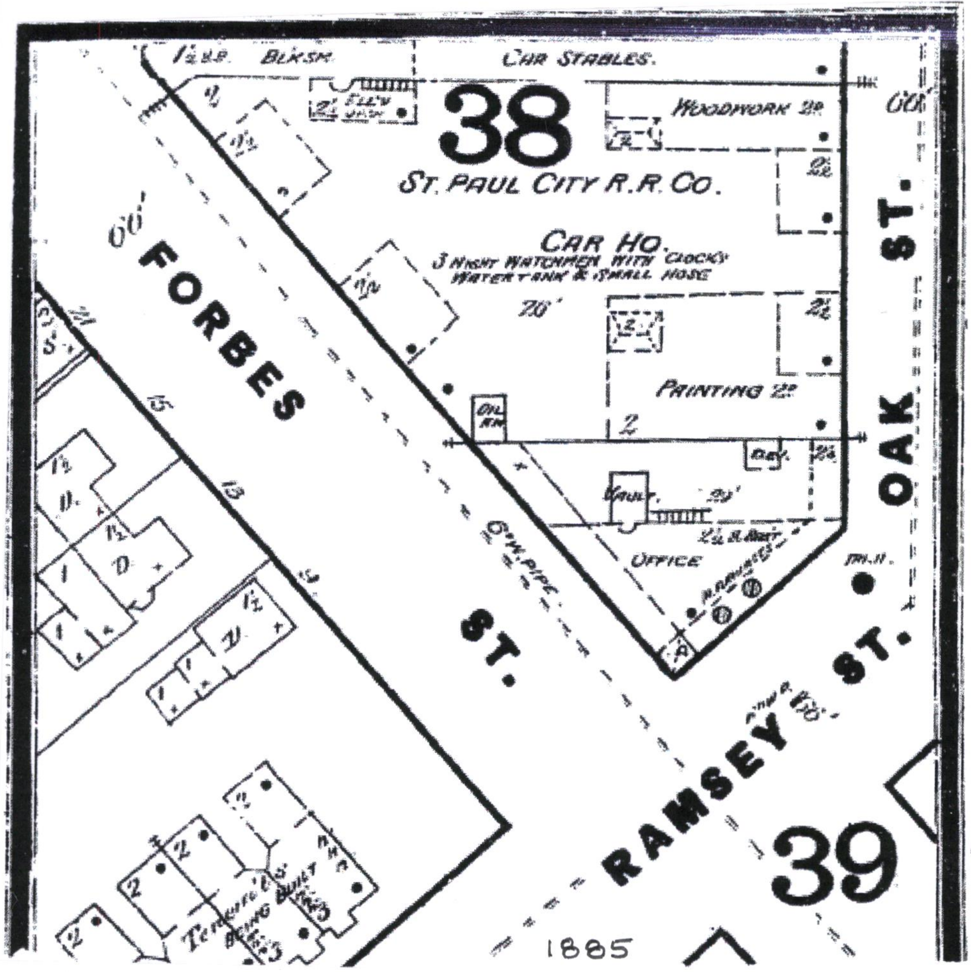
Measurements
  North side of Ramsey St. between Smith Ave. and Thompson St.
    Ramsey St. Car Station   one-story, stone and frame   153' x 194' and 105' x 155'
  Oak St., Ramsey St. and Forbes St. between Pleasant St. and Oak St.
    Oak St. Office, Carhouse and Horse Barn   two-story, stone and frame   158' x 175'

The general offices of SPCR were moved here (in 1884) (by 1891). •The facility was converted into a Car Station during electrification of the horsecar system. Damaged by fire in 1892. •In 1883 the executive offices were relocated to the Globe Building on the southwest corner of 4th and Cedar Streets. The operating offices remained at Oak St. •On July 17, 1899, the entire north one-half of the building was destroyed by fire together with 47 cars. The facility was in use as of the 1902 U.S. Census, referred to as the Smith Avenue Carhouse. •The operating offices were relocated in 1904 to the new company building at College Ave. and Wabasha St.

Used for car storage only from 1907 onward. The buildings were demolished during 1911 and the entire property sold November 1911. Street track abandoned according to the Drum Valuation Report:
  Smith Ave. from Ramsey St. to west end of the carhouse;
    600 l.f. of single track, 52# girder rail, cedar block paving.
  Thompson St. from Ramsey St. to west end of the carhouse;
    540 l.f. of single track, case rail, cobblestone paving.




RAMSEY ST. CAR STATION 1901-02


1½ B.B.
BLKSM.
CAR STABLES.
38
WOODWORK 2D
60'
ST. PAUL CITY R.R. CO.
CAR HO.
3 NIGHT WATCHMEN WITH CLOCKS
WATERTANK & SMALL HOSE
76'
PRINTING 2D
OIL RM.
VAULT
OFFICE
6"W. PIPE
66'
FORBES ST.
OAK ST.
RAMSEY ST.
39
Tenements Being Built
1885

LOSS WAS HEAVY
Minneapolis Tribune (1867-1908); Jul 20, 1899;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 7

LOSS WAS HEAVY

THAT CAUSED BY THE SMITH AVENUE BARN WILL EXCEED $125,000.

There Were Fully Sixty Cars in the Structure, and All But Three Had Motors—The Service of the Street Railway Company in St. Paul Seriously Inconvenienced—Fire Is Now Believed to Have Originated in the Oil Magazine.

The officials of the street railway company are still unable to state definitely the extent of the loss caused by the burning of the Smith avenue barn, St. Paul, Tuesday night.

Men were at work yesterday checking up the number of cars that were in the barn, but this can not be ascertained, it is said, until an inventory of the stock has been taken. Supt. Dow Smith says that fully 60 cars were in the barn and that only three of them without motor equipment.

The loss sustained as originally given was $125,000, and Supt. Smith says it will exceed that sum considerably, as there was a great quantity of supplies stored in the building.

The company was considerably inconvenienced by the loss of so many cars, and for a time yesterday morning the service on some of the lines was reduced, but extra cars arrived during the day from Minneapolis, and toward evening the general service was nearly up to the standard.

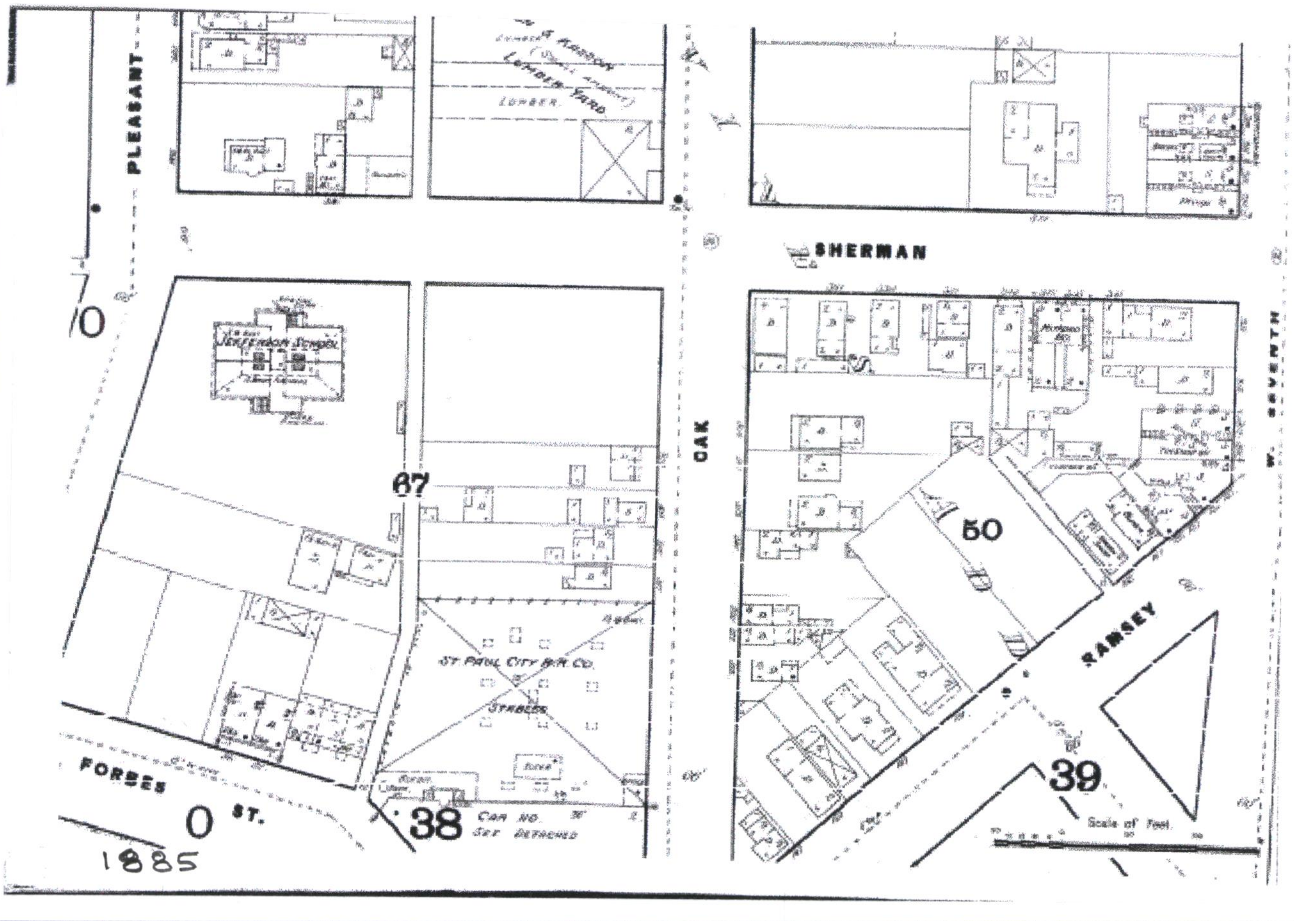
The Selby avenue, East Seventh street and Rice street barns are being used to store the cars and this arrangement will continue until the Smith barn is rebuilt.

Supt. Smith does not know how soon the company will begin the reconstruction of the barn.

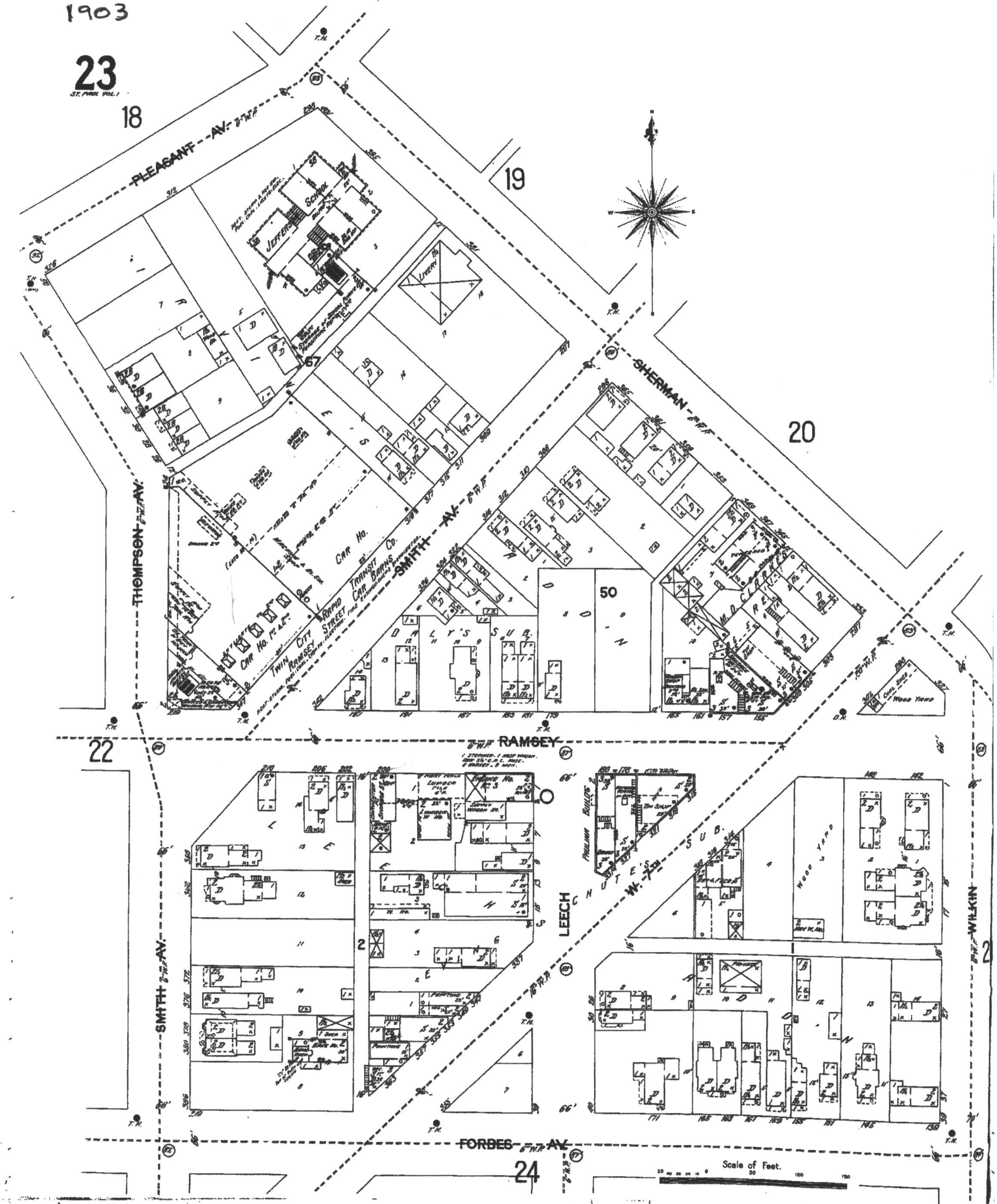
At the barn yesterday the opinion was expressed by several of the men employed there that the fire originated in the oil house or magazine, which was contained in the building. It was a frame enclosure and contained a large quantity of oil.

The workmen say the rapid progress of the fire can only be accounted for in this way. They believe the electric wires ignited the oil in some manner. They do not believe that such a conflagration could arise in a few seconds from the burning of a car.

They argue that cars sometimes catch fire in the street, where there is great draft to aid the progress of the fire, yet considerable time elapses before any damage is done the vehicle.


PLEASANT
LUMBER YARD
SHERMAN
OAK
W. SEVENTH
JEFFERSON SCHOOL
67
50
RAMSEY
ST. PAUL CITY R.R. CO.
STABLES
FORBES ST.
38
CAR HO. SEE DETACHED
39
Scale of Feet
1885

1903


18
19
20
22
24
PLEASANT AV.
SHERMAN
SMITH AV.
THOMPSON AV.
RAMSEY
LEECH
WILKIN
FORBES AV.
W. 7TH
JEFFERSON SCHOOL
LIVERY
67
TWIN CITY RAPID TRANSIT CO.
RAMSEY STREET CAR BARNS
CAR HO.
CAR HO. 1ST & 2ND
DALY'S SUB.
50
CHUTE'S SUB.
ENGINE HO. NO. 3
LUMBER PILE
TIN SHOP
PAULINA BUILDG.
WOOD YARD
COAL SHED
2
T.H.
Scale of Feet.
50
100
150

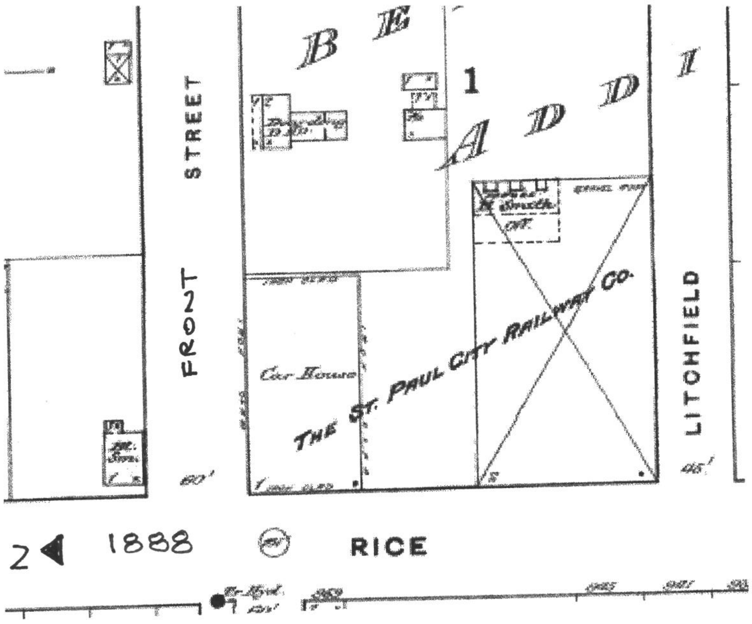
Rice St. Barn
1887-1911

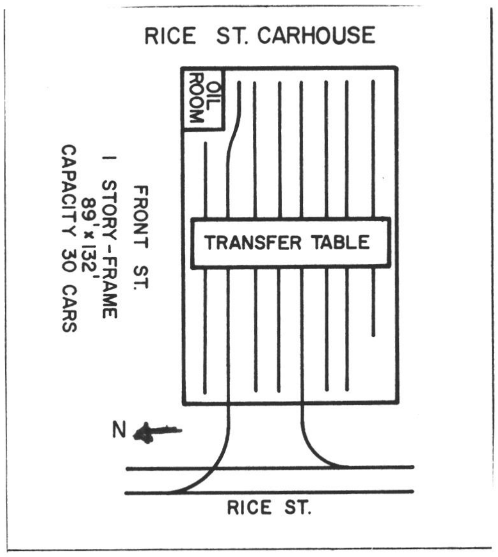
Real estate: two lots acquired December 1885 and eight lots January 1886, located on the east side of Rice St. between Front and Litchfield Streets. Buildings erected during 1887.

Measurements

Stable	two-story, frame	104'10" x 185'4"
Barn	two-story, frame	66' x 132'
Platform		15' x 132'
Carhouse	one-story, frame	23' x 100'
Car Station	one-story, frame	89' x 132'

This facility was converted into a Car Station during electrification of the horsecar system. Sometime after 1898 it was taken out of service and used for car storage only until 1911. It was listed in the 1902 U.S. Census. Some old building materials were sold December 1911. Property sold May 1913 to Barrett & Zimmerman.


BE ADDI
1
STREET
FRONT
Car House
THE ST. PAUL CITY RAILWAY CO.
LITCHFIELD
60'
66'
2
1888
RICE


RICE ST. CARHOUSE
OIL ROOM
TRANSFER TABLE
FRONT ST.
1 STORY-FRAME
89' x 132'
CAPACITY 30 CARS
N
RICE ST.

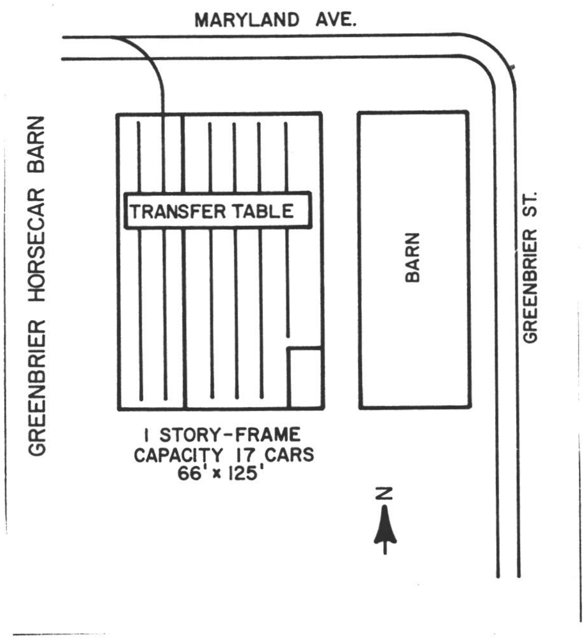
Greenbrier Barn
1888-1891

Real estate: Lots 1-7, Block 1, acquired 1888, located on the southwest corner of Maryland Ave. and Greenbrier St. Buildings erected during 1888.

Measurements

Carhouse	one-story, frame	66.1' x 125.0' long
Horse Barn	two-story, frame	167.4' x 125.0' long

After electrification of the horsecar system it was only for storage of unused cars, including winter storage of open cars. One old building sold October 1904. Property sold October 1905.


MARYLAND AVE.
GREENBRIER HORSECAR BARN
TRANSFER TABLE
BARN
GREENBRIER ST.
I STORY-FRAME
CAPACITY 17 CARS
66' x 125'
N

CABLECAR STATIONS

(Converted to Electric Car Stations)

St.PAUL CITY RAILWAY

Selby Ave. Station
1887-1907

Real estate: Lots 9-11, Block 6, purchased April-June 1887, located on the south side of Selby Ave. between Dale and Kent Streets. Lot 8 was acquired November 1906 from Thomas Lowry.

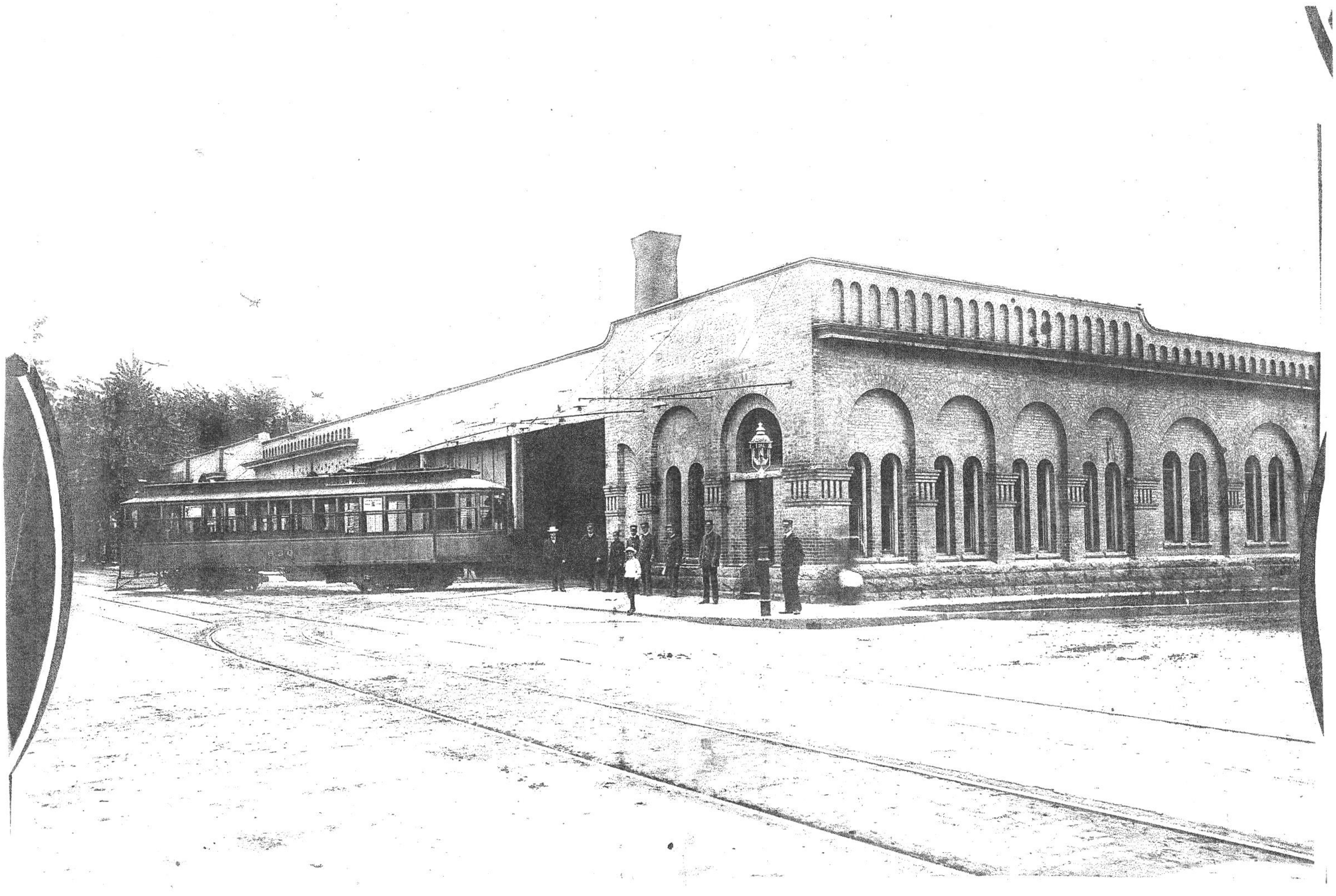
Measurements

Original Building	two-story, brick	171'0" x 172'6"
Powerhouse addition 1888	one-story, brick	50' x 172'

The "Merriam Park" extension of the cable line on Selby Avenue was built as an electric line, opened during September-October 1891. Its electric cars were operated from this facility.

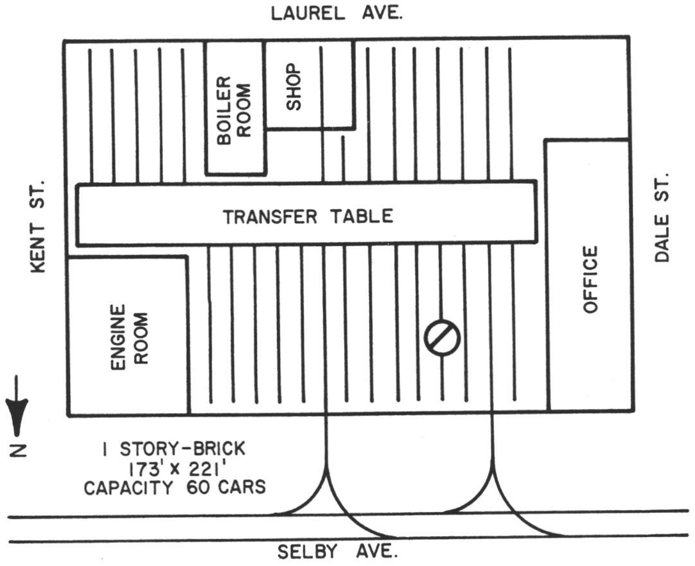
Upon electrification of the "Selby Avenue" cable line in 1898 the facility was converted for complete electric car operation. It was listed as an operating electric car station in 1897.

The facility was taken out of service in 1907 upon completion of the Snelling Station. Tracks were removed during August 1907. The property was sold October 1907 to Clara Kennedy. Later photographs show the building in use by the Citizens Ice Company.



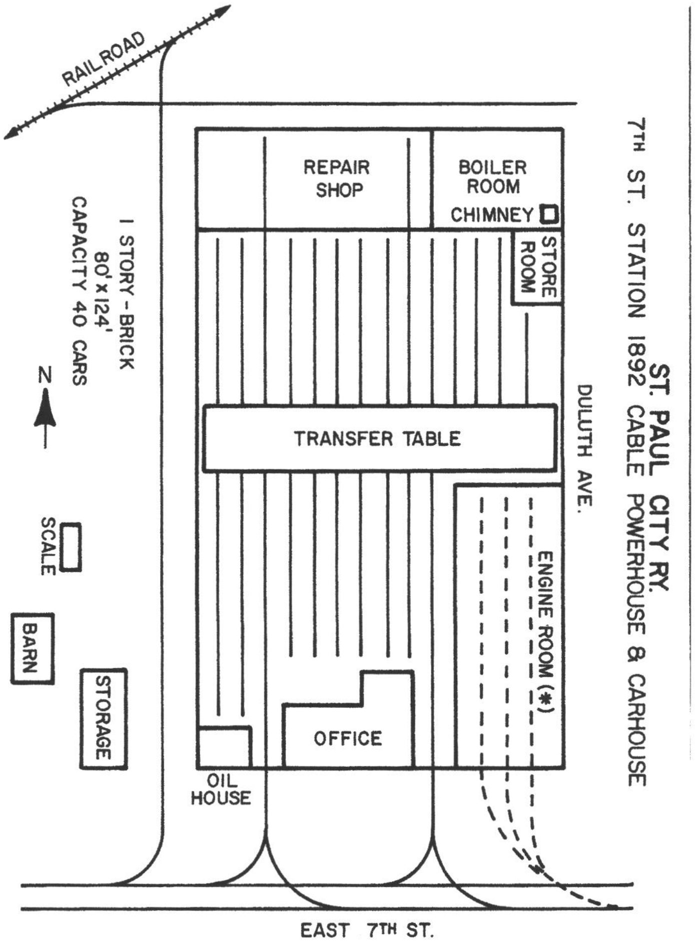
ST. PAUL CITY RY.

SELBY CABLE POWERHOUSE-CABLE CAR HOUSE
STREETCAR HOUSE
1892


LAUREL AVE.
BOILER ROOM
SHOP
KENT ST.
TRANSFER TABLE
DALE ST.
OFFICE
ENGINE ROOM
N
I STORY-BRICK
173' x 221'
CAPACITY 60 CARS
SELBY AVE.

EAST 7th STREET
1889-1893

Located on the north side of E. 7th St. at the northwest corner of E. 7th St. and Duluth St. One-story, brick building, 80' x 124'. The repair shop portion of the building was also used for repairs to the electric cars after electrification of the horsecar system during 1890-1892. This repair work was transferred 8-13-1892 to the 31st St. Roundhouse, Minneapolis. The "East 7th Street" cable line was converted to electric operation during 1893 as was this facility. For subsequent history see E. 7th St. Station in the Electric Car Stations section.


ST. PAUL CITY RY.
7TH ST. STATION 1892 CABLE POWERHOUSE & CARHOUSE

RAILROAD
REPAIR SHOP
BOILER ROOM
CHIMNEY
STORE ROOM
I STORY-BRICK
80' x 124'
CAPACITY 40 CARS
N
TRANSFER TABLE
DULUTH AVE.
SCALE
ENGINE ROOM (*)
BARN
STORAGE
OFFICE
OIL HOUSE
EAST 7TH ST.

(*) WHEN E. 7TH ST. CABLE LINE WAS ELECTRIFIED IN 1893, THE ENGINE ROOM MACHINERY WAS REMOVED AND TRACKS INSTALLED AS INDICATED BY DOTTED LINES.

ELECTRIC CAR STATIONS

Transitional Period

1902 U.S. Census. Nine carhouses in use. Four in Minneapolis: Minnehaha, 31st Street, East Side, and Bloomington. Five in St.Paul: Smith Ave., Rice St., Selby Ave., E. 7th St. and Midway.

1907 U.S. Census. Five carhouses in use. Three in Minneapolis: 31st Street, East Side, and Bloomington. Two in St.Paul: E. 7th St. and Snelling.

After 1914

Six car stations operated. Four in Minneapolis: East Side, Nicollet, Lake Street, and North Side. Two in St.Paul: Duluth Ave. (renamed from E. 7th St.), and Snelling.

TCRT CARHOUSES

Compiled from Minneapolis Tribune Articles

June 1891: Midway Carhouse was placed in operation.

1-1-1893: Repair Shops at 3rd Ave. N. and 2nd St. N.: cars are overhauled, rebuilt or constructed new. Extensive buildings at 31st St. and Nicollet Ave. are also supply and storehouses.

2-20-1898: Having plans prepared for offices, warehouse and carhouse to be erected this spring at 31st St. and Nicollet Ave. Ground is 175' x 360'. It will be three stories with gravel roof, brick and mill construction.

ELECTRIC CAR STATIONS

MINNEAPOLIS STREET RAILWAY

31st Street Station
31st Street Shops
1890-1912

"The Motor Line" roundhouse, repair shop and car storage yard at 31st St. and Nicollet Ave. were acquired with the lease of the Minneapolis, Lyndale & Minnetonka Ry., April 1887. Refer to the drawings appended. The following additional measurements were obtained from the A. L. Drum & Company Valuation Report.

Depot	one-story, frame	22' x 36' and 18' x 30'
Coal House (on 31st St.)	one-story, frame	18' x 60'
Coal House (in the yard)	one-story, frame	26' x 60'
Sand House (by roundhouse track 1)	one-story, frame	12' x 16'
Store[room] (at the depot)	one-story, frame	16' x 20'
Union Railroad Storage Co.(the east building at 31st and Nicollet)	one-story,frame	16' x 50'

This was the site selected for the proposed 1st Ave. S. and Nicollet Ave. cablecar line powerhouse and carhouse. Construction began on the powerhouse in late 1889 or early 1890 (refer to the chapter on Power Generation and Distribution for further information). In January 1890 the Minneapolis city council approved electrification instead of cable power. During 1890 the office-storehouse building was constructed on the northwest corner of the property at 31st St. and Blaisdell Ave. for use as a general storehouse plus offices for the purchasing agent, engineer, roadmaster and master mechanic. A large brick carhouse building on the southeast corner of the property at 32nd St. and Nicollet Ave. was completed in June 1891. In late 1891 the existing roundhouse and repair shop, including the turntable, was modified to provide a complete general repair shop for both the Minneapolis and St.Paul systems. Effective August 13, 1892, all repairs to all equipment were performed here.

Excerpts from an article in the February 1893 Street Railway Journal, on a separate page, describe the shop faciities. This article also mentioned that the 31st St. Powerhouse used oil for fuel. Storage tanks were located at the rear of the powerhouse building. Oil was delivered direct from tank cars, a siding being provided for that purpose. [There must have been a track connection with the CM&StP Ry at 29th St. and Nicollet Ave.)

The erecting shop on the southwest corner of the property at 32nd St. and Blaisdell Ave. was completed in April 1898, providing a fully-equipped carbuilding facility. Capacity of the shop was eight cars per month.

By 1904 both the repair and erecting shops had become inadequate to meet the system's needs. However both continued in service until replaced in 1907 by the newly completed Snelling Shops in St.Paul. The car station continued in service until 1911 when construction began on a new Nicollet Station.

general manager, W. J. Hield. Material for overhead repairs is issued on a requisition made by the foreman and approved by the electrical engineer; and the foremen, in their daily reports, are required to make returns for the old material, the value of which is credited to the supply department. Formerly the workmen took possession of the old material, which they sold to junkmen, resulting in quite a loss to the company, a deal which the new arrangement corrects.

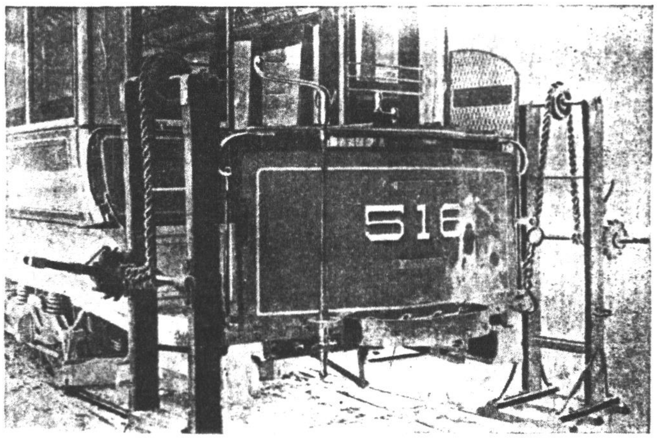


FIG. 2.—CAR JACK—MINNEAPOLIS.

REPAIR SHOPS.

The car repair shops are located at the Third Avenue station, and the iron shops are at the 31st Street station. The former are conveniently arranged with a good equipment of wood working tools, mostly of Fay's manufacture, which are located on the ground floor, and operated by power from the main station. The carpenters' benches, erecting and paint shop are on the second floor. The carpenters' benches are arranged parallel to each other, to one side of the shop, and system, order and cleanliness prevail, as before noted.

A very convenient jack for raising the ends of cars is employed in this shop, and is illustrated in Fig. 2. One man can move and operate them, and they are frequently employed on the line for handling disabled cars. The Third Avenue station, including the car shop and offices, has recently been equipped with the Grinnell dry pipe, fire sprinkling system, having 1,041 sprinklers. The water is taken from the city mains which carry sixty pounds pressure, and this is supplemented by a steam pump and reservoirs.

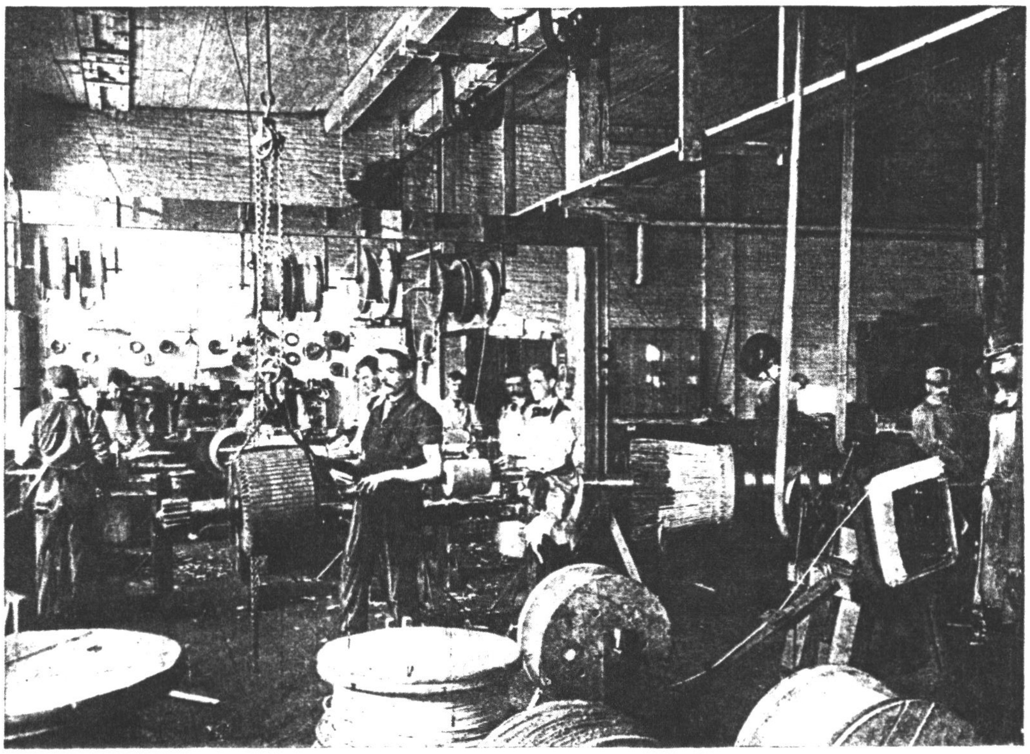


FIG. 3.—WINDING DEPARTMENT OF REPAIR SHOP—MINNEAPOLIS.

The iron shops are more extensive (150 × 125 ft.) and better equipped than any which we remember to have seen. Among the tools we note three Gould & Eberhardt gear cutters with flexible shafts, one planer, two shapers, six drill presses, twelve lathes, emery grinders, two milling machines, a special turret nut machine, a wheel boring machine, two wheel presses, one key seating machine, axle lathes, etc. A large tool room is railed off in which are a number of special machines for making the cutting tools and drills, and the whole arrangement is modeled after the practice of large manufacturing establishments, giving facilities for the manufacturing of armatures complete, and repairs of nearly every street railway appliance. A brass foundry has recently been added, having a daily capacity of 1,000 lbs. of metal. About fifty men are employed regularly in the repair shop and twenty-eight in the winding department, a view of which is shown in Fig. 3.

The blacksmith shop adjoins the repair shop, and the equipment consists of one Bradly hammer, one steam hammer, seven forges, and a number of small tools.

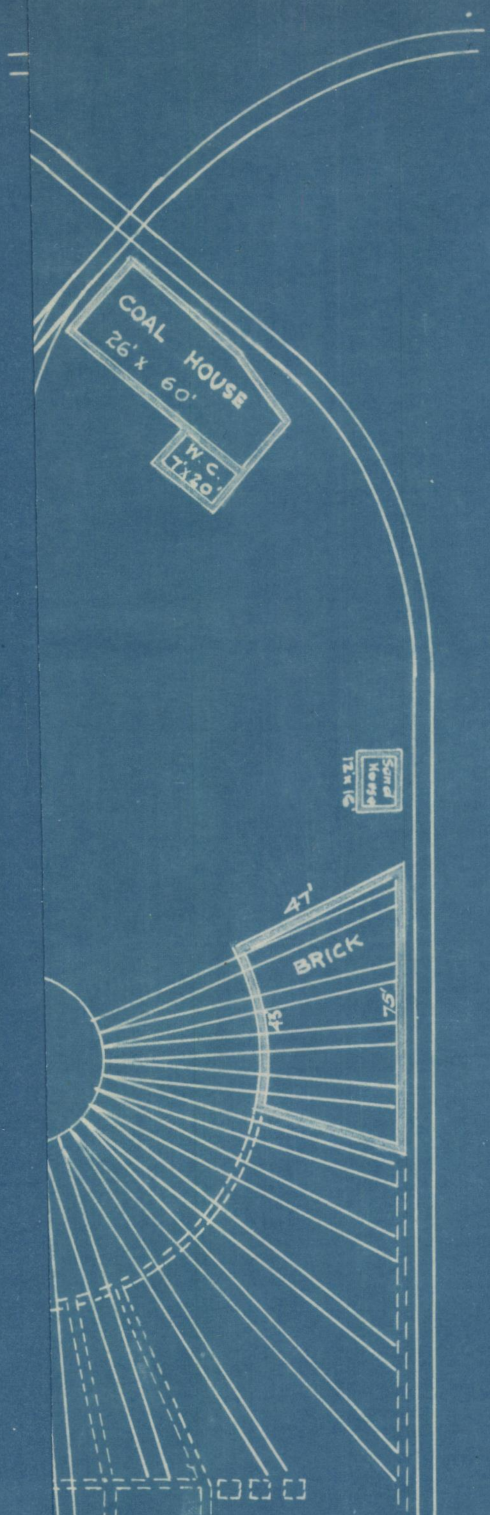
The trolley poles, which are of ash, are here manufactured. The conducting wire is spirally wound about the pole, giving sufficient length for splicing when necessary.

STOREROOMS.

The 31st Street station is built on three sides of a block, and that portion fronting on 31st Street is three stories in height and is occupied as offices by the material accounting department and storerooms. The heavier material, such as wire reels, wheels and fields, is stored on the ground floor, while the second and third floors are utilized for the lighter parts. The rooms are equipped with rows of double shelving and bins, thus providing for the classification and housing of the almost endless number of parts. The amount of surplus stock carried by this company is surprising. It is in fact equal to that carried by some of the electrical supply companies. The rooms are warmed by steam heat, and there are elevators and every appliance for the convenient handling of stock. It is needless to say that they are models in their way.

TRANSFERS.

Nearly all the Minneapolis lines converge to one point, most of the cars passing over the loop, from which point they are dispatched by special agents. Transfers are given on nearly all the lines, and for this purpose agents are stationed at three or four different points for the purpose of issuing transfer tickets. These tickets are punched for the purpose of indicating the day and hour of issue, and are limited to a brief period. At each of the transfer stations small circular booths are erected on the sidewalks near the corner, for the convenience and comfort of the agents. These are provided with a stove, clock, table and other conveniences, and some of them are


COAL HOUSE
26' x 60'
W.C.
7'x20'
Sand House
16'x21'
47'
BRICK
45'
75'

BUILDINGS

NICOLLET CAR HOUSE

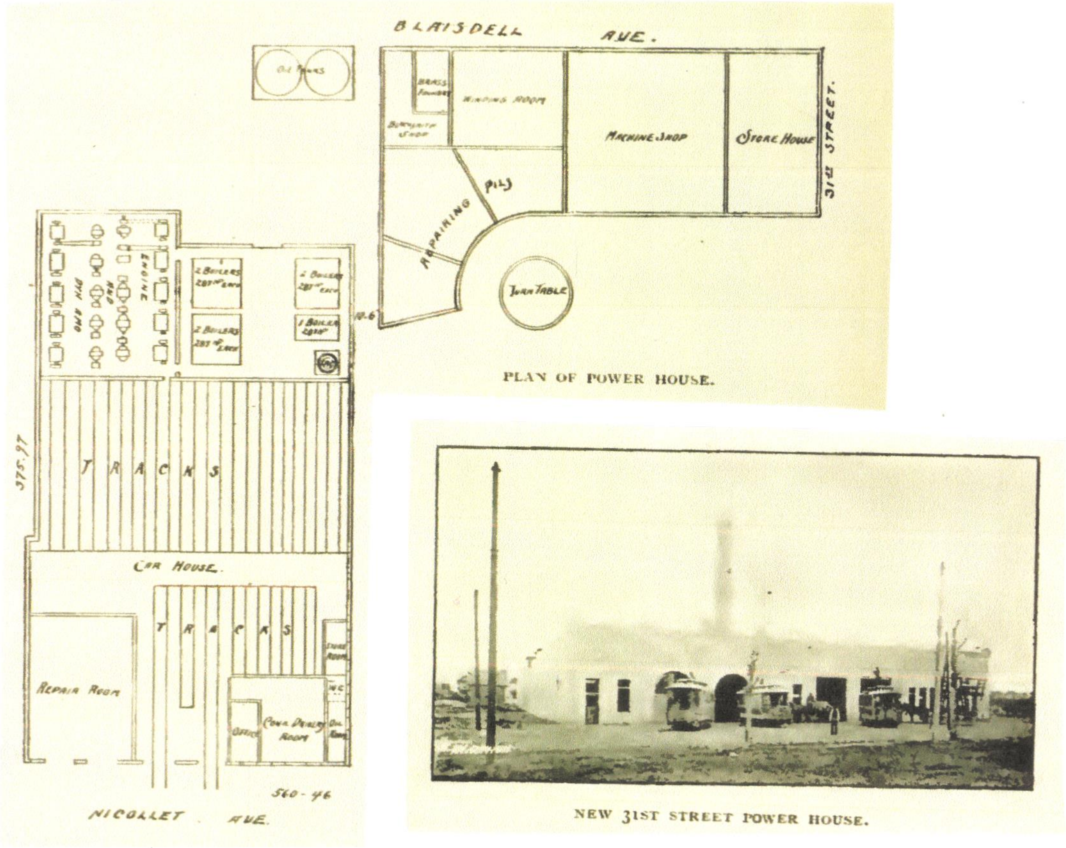
NICOLLET AVE AND 31ST ST.

HORSE CAR LINES

MINNEAPOLIS STREET RAILWAY CO

31st St. Station and Shops

St Ry Review May 1892: photo and map from the article are below. Note there were no outside storage tracks on the south side of the building.



BLAISDELL AVE.
Oil Tanks
Brass Foundry
Winding Room
Blacksmith Shop
Machine Shop
Store House
31st STREET.
Pits
Repairing
Turn Table
2 Boilers
1 Boiler
10.6
TRACKS
375.97
Car House.
TRACKS
Repair Room
Office
Coal
560-46
NICOLLET AVE.

PLAN OF POWER HOUSE.

NEW 31ST STREET POWER HOUSE.

St Ry Review March 1894: illustrated article on the "Jumbo" Snow Plow [#1 "Mogul"] has four photographs. One of the "pole side" indicates at least three outside storage tracks on the south side of the building, behind a fence along [redacted] 32nd St.

St Ry Review February 1899: the complete article on the 31st St. Powerhouse is in my Notebook 2A. Refer to the attached map which has been reprinted from the article together with a summary of the information pertaining to the carhouse and shops. Note the new shop building covered the entire width of the block including removal of the storage tracks. The carhouse was extended into the eastern part of the new building plus three tracks set apart for a paint shop. The single main line track connection was numbered 15.

The photograph of a streetcar boat under construction was taken on track #15 outside of the building. Apparently this three-track shop area was also used for boat construction during the winter of 1905-1906.

31st STREET SHOPS
St. Ry. Review 2-15-1899

General Storehouse building, 65 x 95, built 1890. Includes offices of (1) purchasing agent and general storekeeper, (2) engineer and roadmaster, and (3) master mechanic. Two rooms on the second floor recently fitted out for offices for Calvin Goodrich and Willard Hield who spend part of each day there.

Buildings adjacent to the Storehouse built 1884 [sic] by ML&M Ry.

Machine Shop 94 x 110	45 employees	
Armature Room 32 x 53	13 employees	
Brass Foundry 27 x 52	4 employees	
Blacksmith Shop 42 x 52	26 employees	(operate day and night)
General Repair Shop irregular shape	31 employees	

12 pits, three long enough to handle two cars

Carhouse and old Powerhouse built 1889:

Carhouse is 280' wide x 158' long, 14 tracks

Boiler Room still has 7 Stirling Boilers, some used for heating the buildings

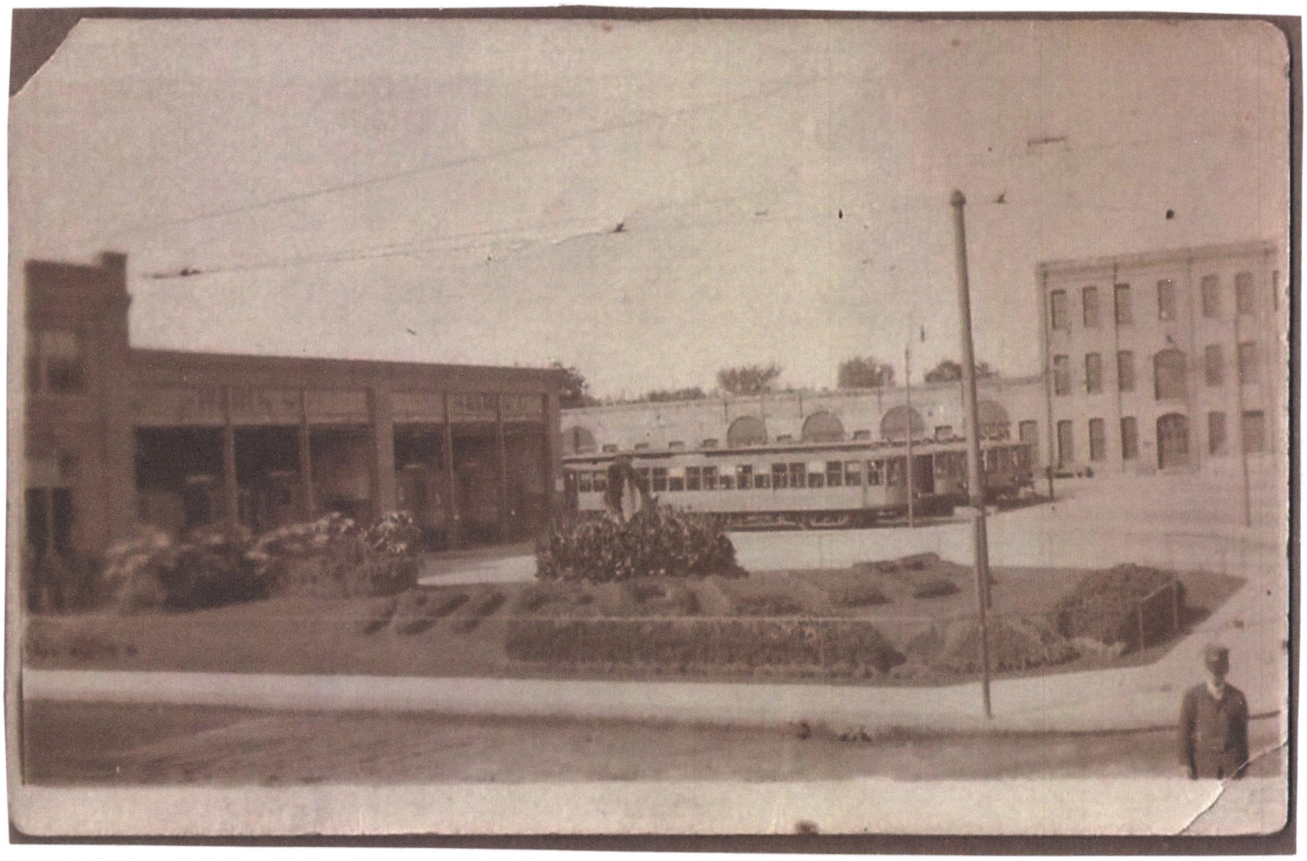
Engines and Generators have been removed; one corner partitioned off for housing the one Rotary Converter. Remaining space now filled with woodworking machinery, and called the Mill Room.

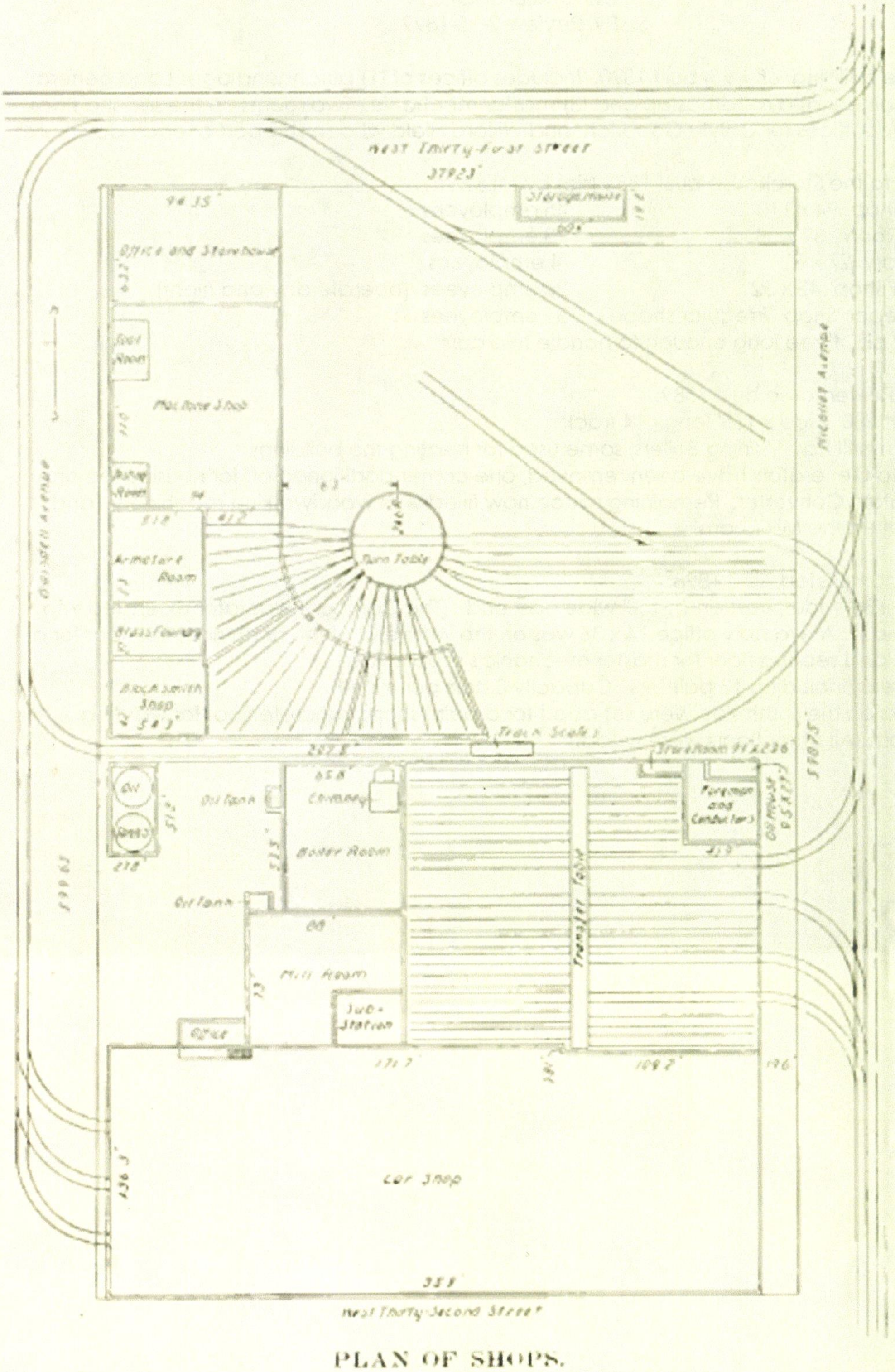
Car Building Shop completed April 1898.

359' long x 136' wide (west end), 130' wide east end. [The Carhouse was later extended into the east end.] A two story office 14 x 36 was on the west end of the north side; first floor for a storeroom, and second floor for master mechanic's shop office.

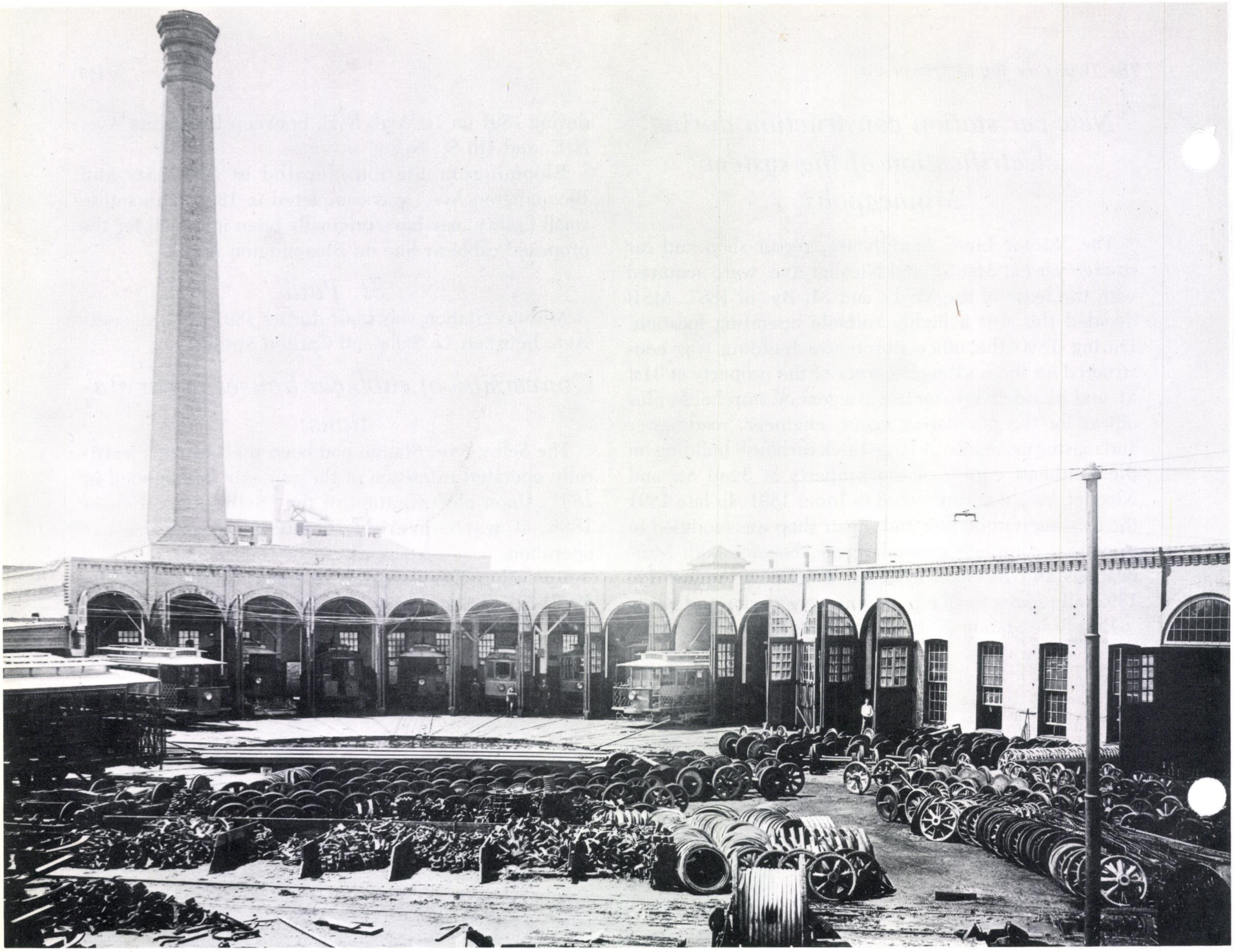
74 employees, including 13 painters. Capacity 8 cars per month.

Three tracks on the south side were set apart for a paint shop; concrete floor for washing cars. (All other floors were wood.)



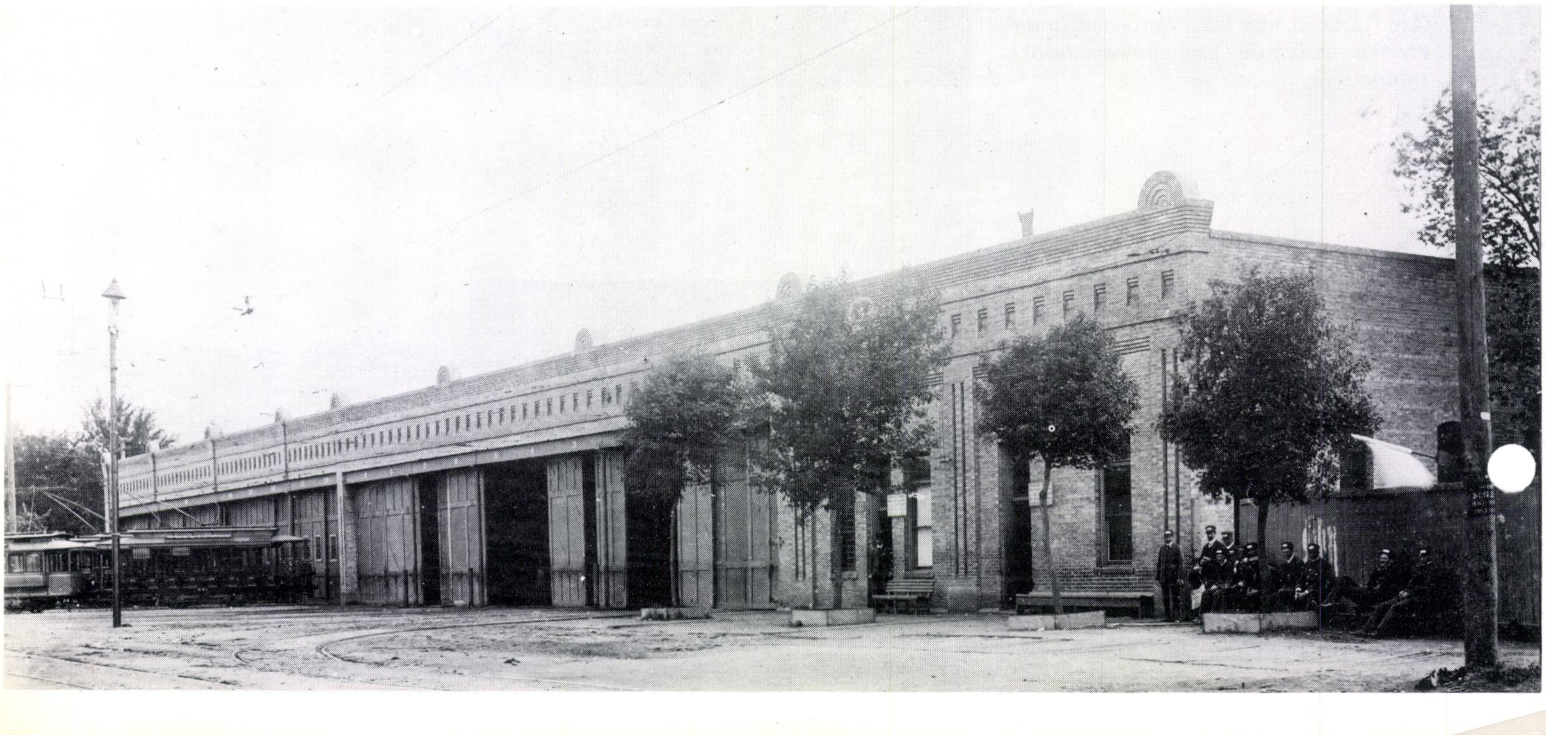

West Thirty-First Street
379.23'
Storage House
Office and Storehouse
94.35'
Tool Room
Machine Shop
Pump Room
Turn Table
Armature Room
Brass Foundry
Blacksmith Shop
Track Scales
Store Room 91 x 22.6
Foreman and Conductors
Oil House
Oil
Oil Tank
Chimney
Boiler Room
Mill Room
Sub-Station
Office
Transfer Table
Car Shop
359
West Thirty-Second Street

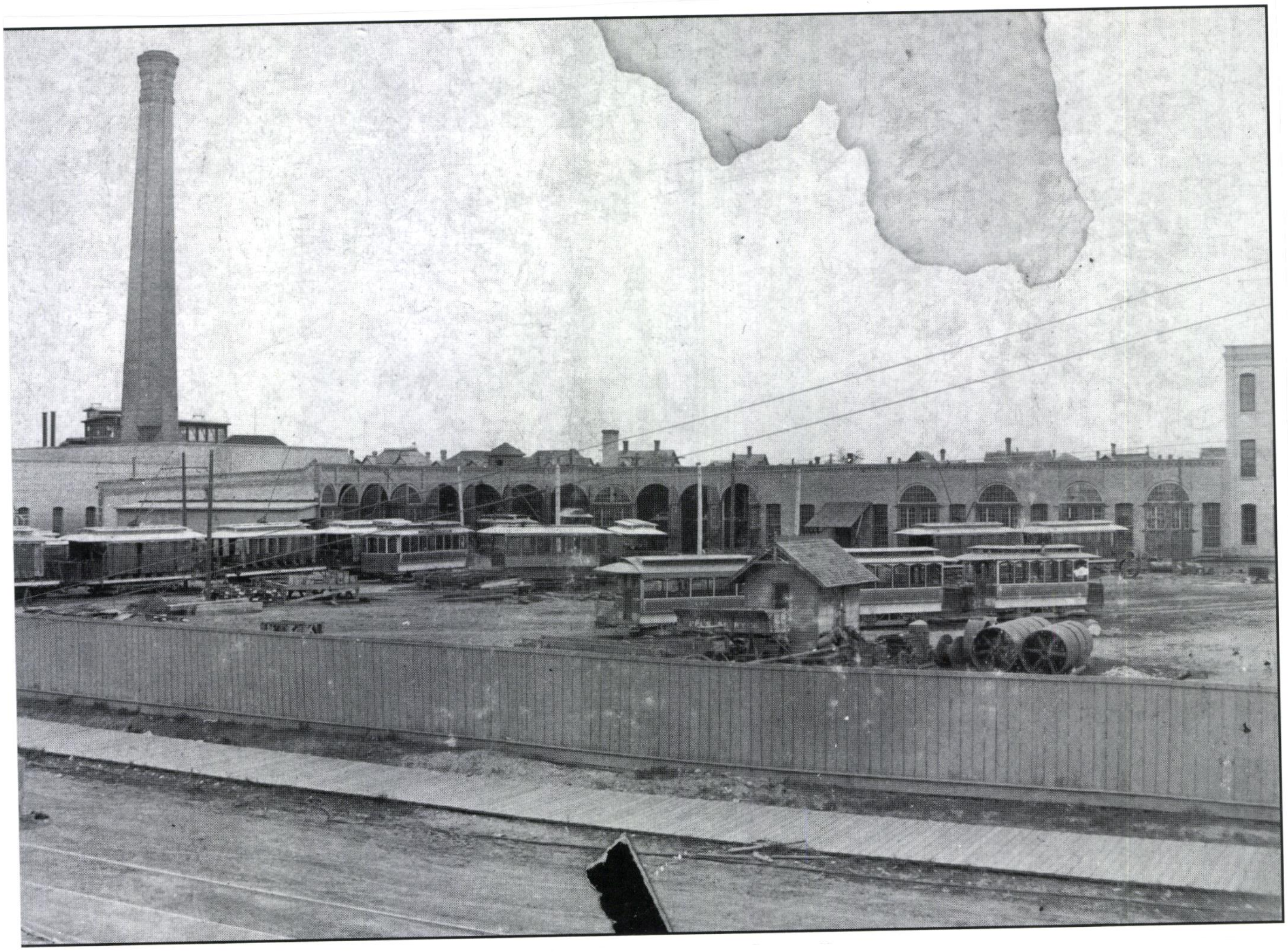
PLAN OF SHOPS.

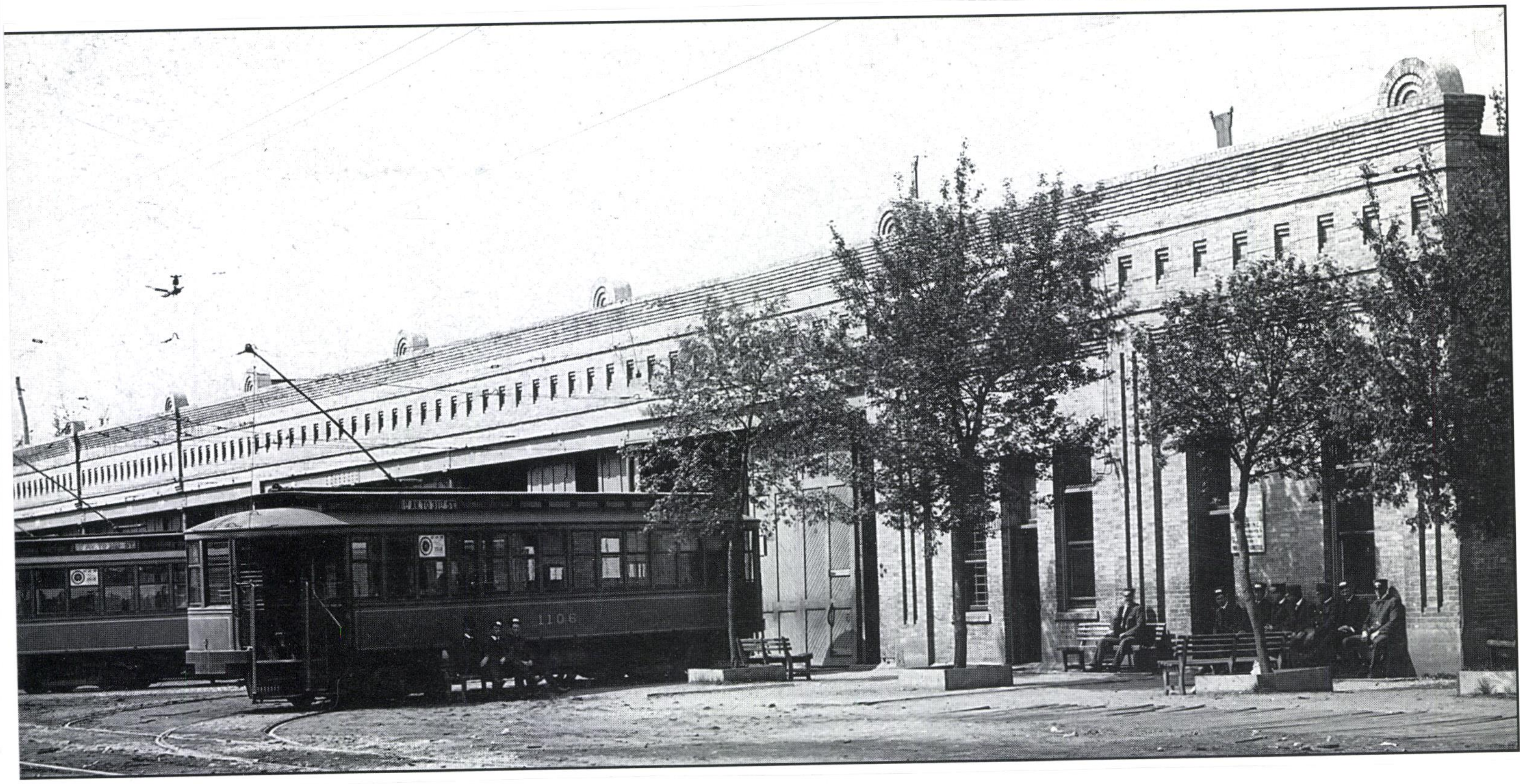


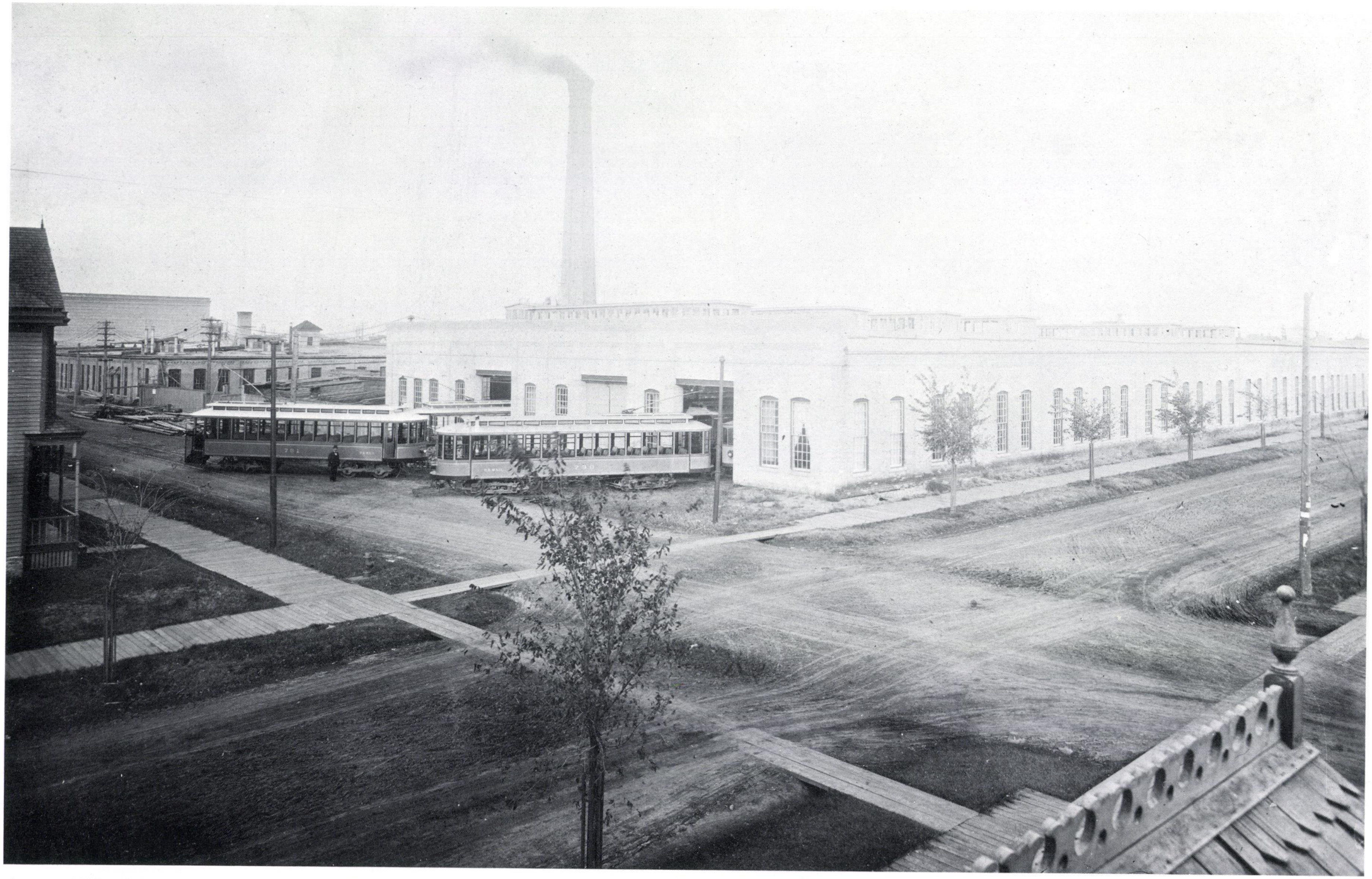
Above: The original repair shops at 31st St. and Nicollet Ave., Minneapolis, about 1901. The chimney for the powerhouse dominates the sky line. (Edmund A. Brush; Minnesota Historical Society collection)

Below: 31st St. Station, Minneapolis, looking south on Nicollet Ave. toward 32nd St. (Robert Bowes collection)





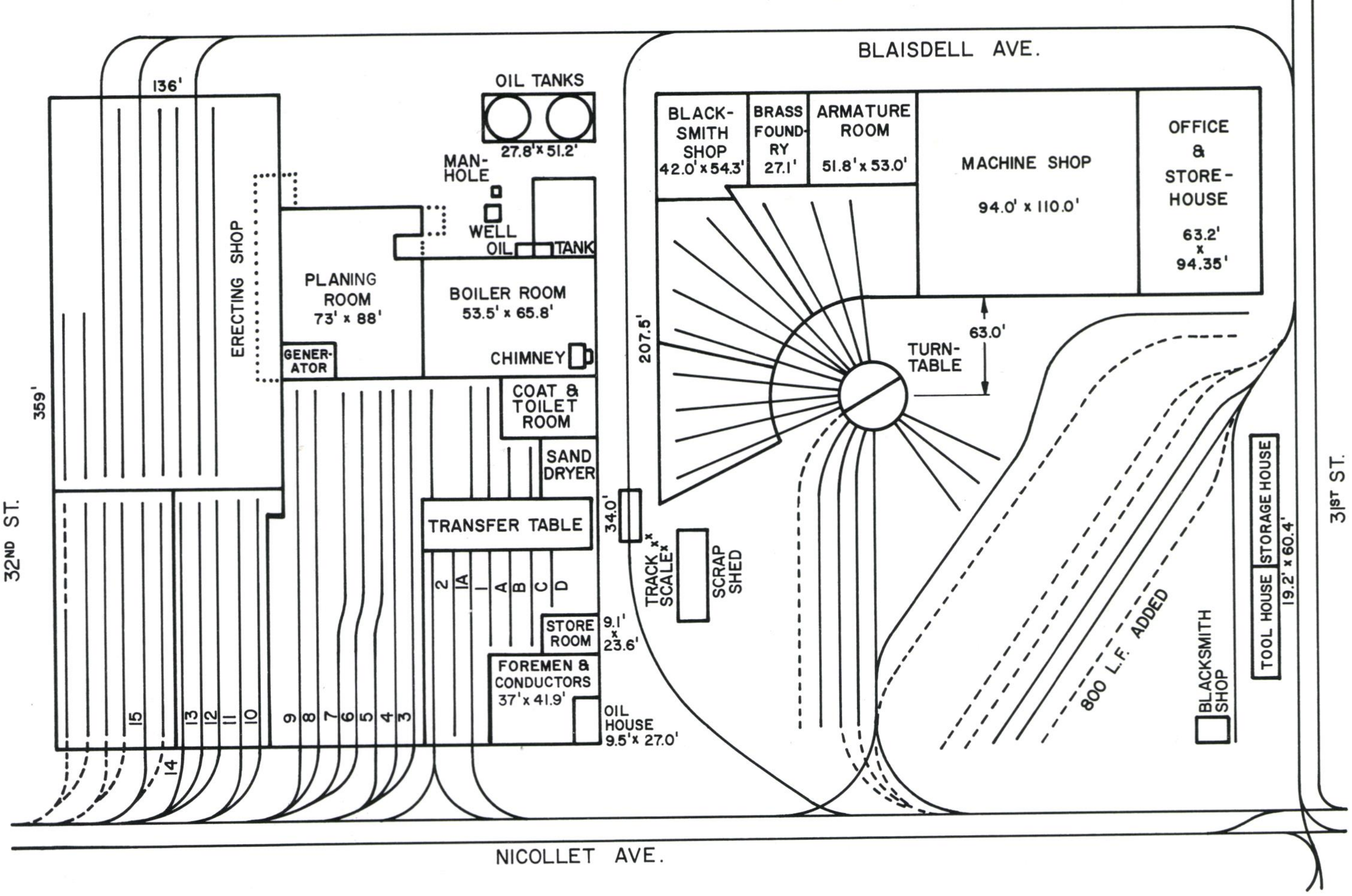

1106



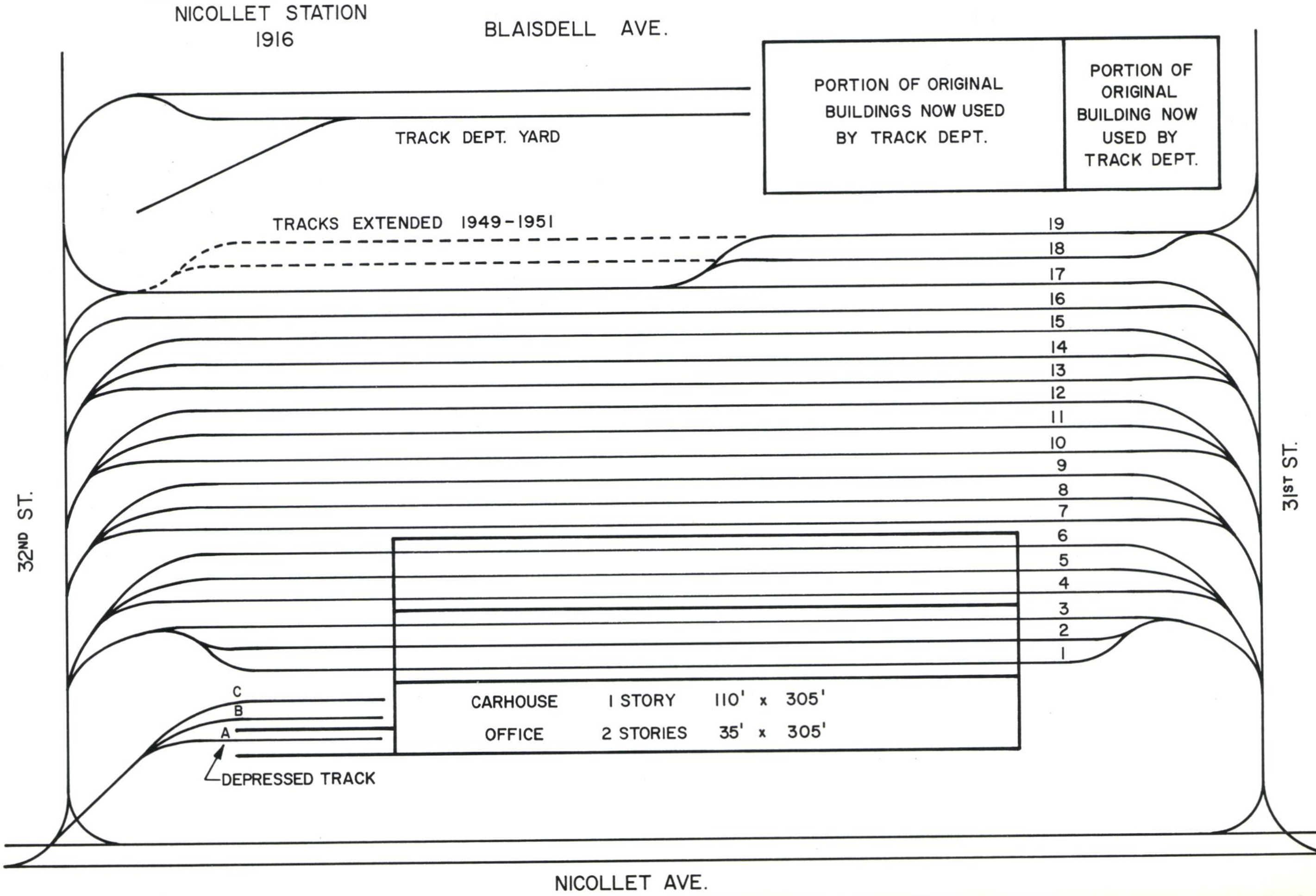
A rare 1899 photograph of the 31st St. Shops, Minneapolis, looking northeasterly from the intersection of 32nd St. and Blaisdell Ave. The powerhouse chimney rises above the erecting shop building. The repair shop, roundhouse and storehouse buildings are at the left center. Car 751, left, has Bemis M. T. trucks while 738, right, has Brill (Old) trucks. (Sweet Studios; Robert Bowes collection)

MINNEAPOLIS ST. RY.
31ST ST. STATION AND SHOPS
1902

(---- TRACKAGE PENCILLED IN ON ORIGINAL)
(1080 L.F. ADDED 1904)

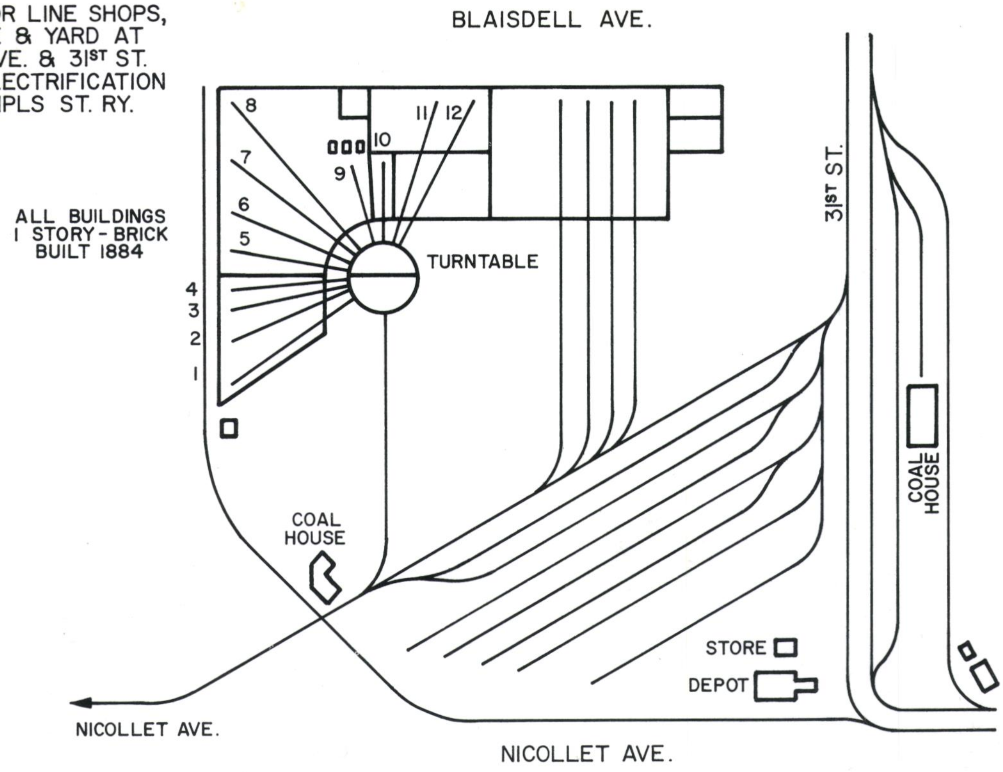

BLAISDELL AVE.
136'
OIL TANKS
27.8' x 51.2'
MAN-HOLE
WELL
OIL
TANK
ERECTING SHOP
PLANING ROOM 73' x 88'
BOILER ROOM 53.5' x 65.8'
CHIMNEY
GENER-ATOR
COAT & TOILET ROOM
SAND DRYER
TRANSFER TABLE
2 1A 1 A B C D
STORE ROOM
9.1' x 23.6'
FOREMEN & CONDUCTORS 37' x 41.9'
OIL HOUSE 9.5' x 27.0'
359'
32ND ST.
15 14 13 12 11 10 9 8 7 6 5 4 3
207.5'
34.0'
TRACK SCALE
SCRAP SHED
BLACK-SMITH SHOP 42.0' x 54.3'
BRASS FOUND-RY 27.1'
ARMATURE ROOM 51.8' x 53.0'
MACHINE SHOP 94.0' x 110.0'
OFFICE & STORE-HOUSE 63.2' x 94.35'
63.0'
TURN-TABLE
800 L.F. ADDED
BLACKSMITH SHOP
TOOL HOUSE
STORAGE HOUSE 19.2' x 60.4'
31ST ST.
NICOLLET AVE.

MINNEAPOLIS ST. RY.
NICOLLET STATION
1916


BLAISDELL AVE.
TRACK DEPT. YARD
PORTION OF ORIGINAL BUILDINGS NOW USED BY TRACK DEPT.
PORTION OF ORIGINAL BUILDING NOW USED BY TRACK DEPT.
TRACKS EXTENDED 1949-1951
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
32ND ST.
31ST ST.
C B A
DEPRESSED TRACK
CARHOUSE 1 STORY 110' x 305'
OFFICE 2 STORIES 35' x 305'
NICOLLET AVE.

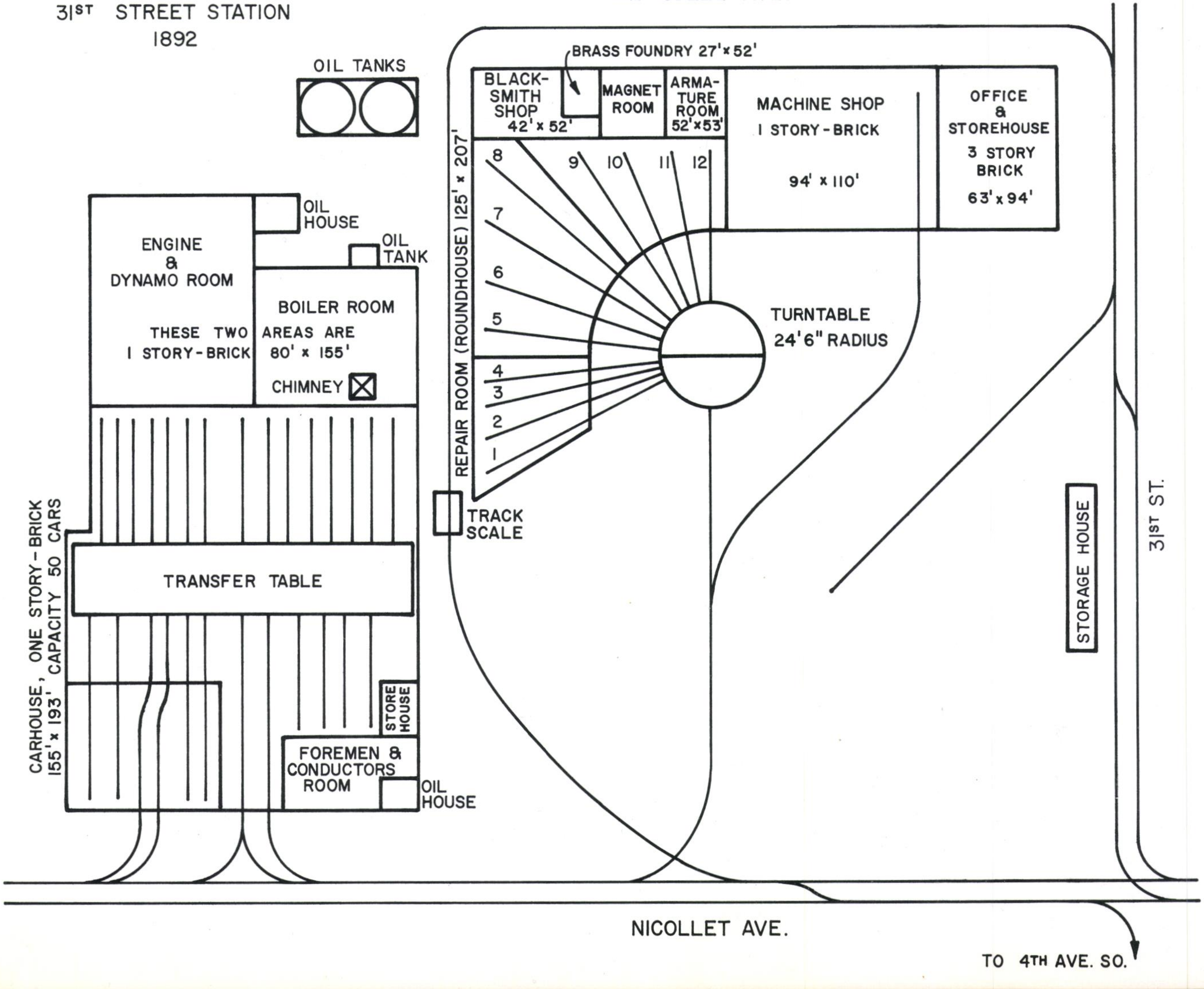
MINNEAPOLIS, LYNDALE & MINNETONKA RY.

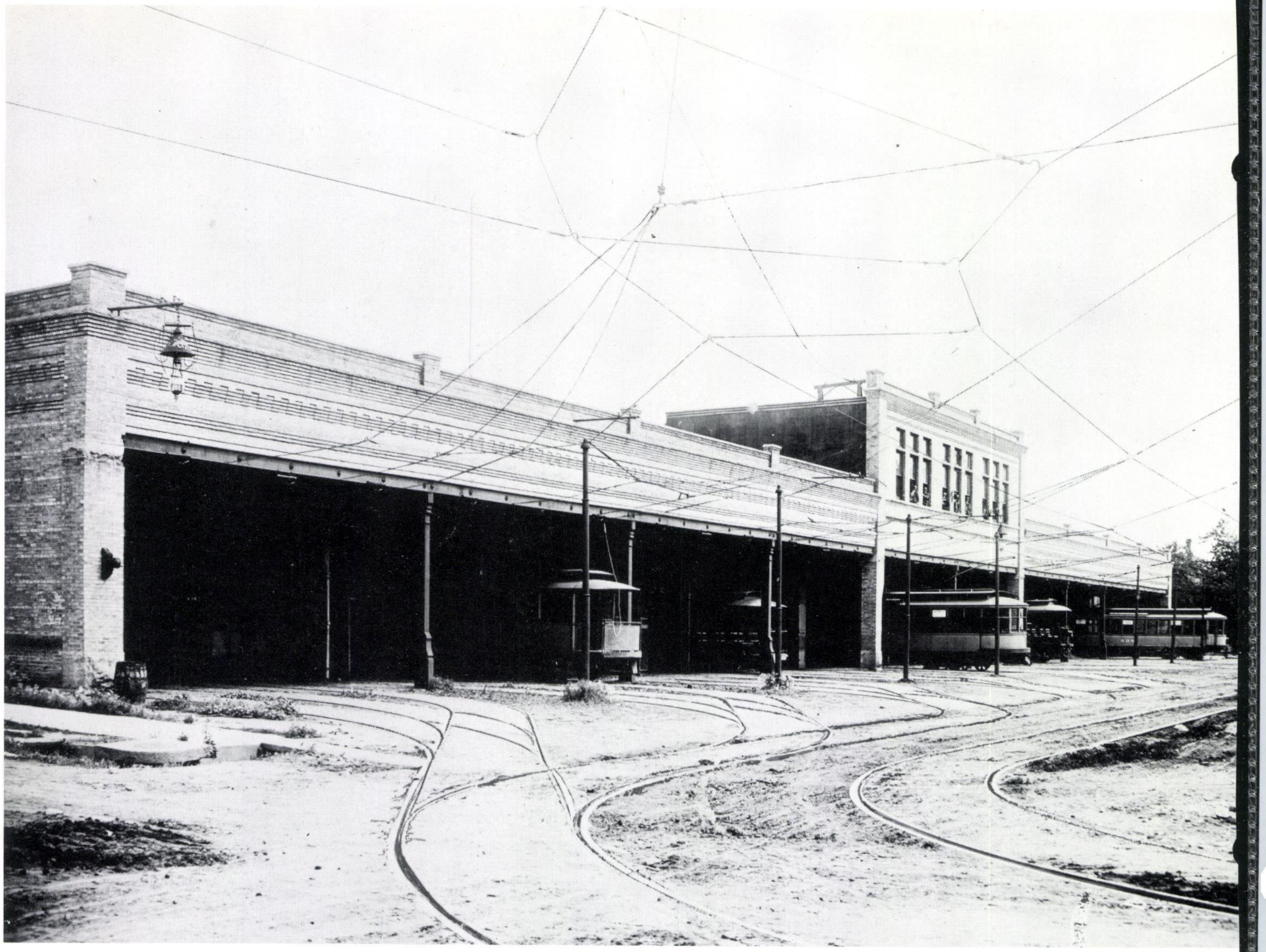
STEAM MOTOR LINE SHOPS,
ROUNDHOUSE & YARD AT
NICOLLET AVE. & 31ST ST.
PRIOR TO ELECTRIFICATION
IN 1890 BY MPLS ST. RY.


BLAISDELL AVE.
ALL BUILDINGS
1 STORY - BRICK
BUILT 1884
1
2
3
4
5
6
7
8
9
10
11
12
TURNTABLE
31ST ST.
COAL HOUSE
COAL HOUSE
STORE
DEPOT
NICOLLET AVE.
NICOLLET AVE.

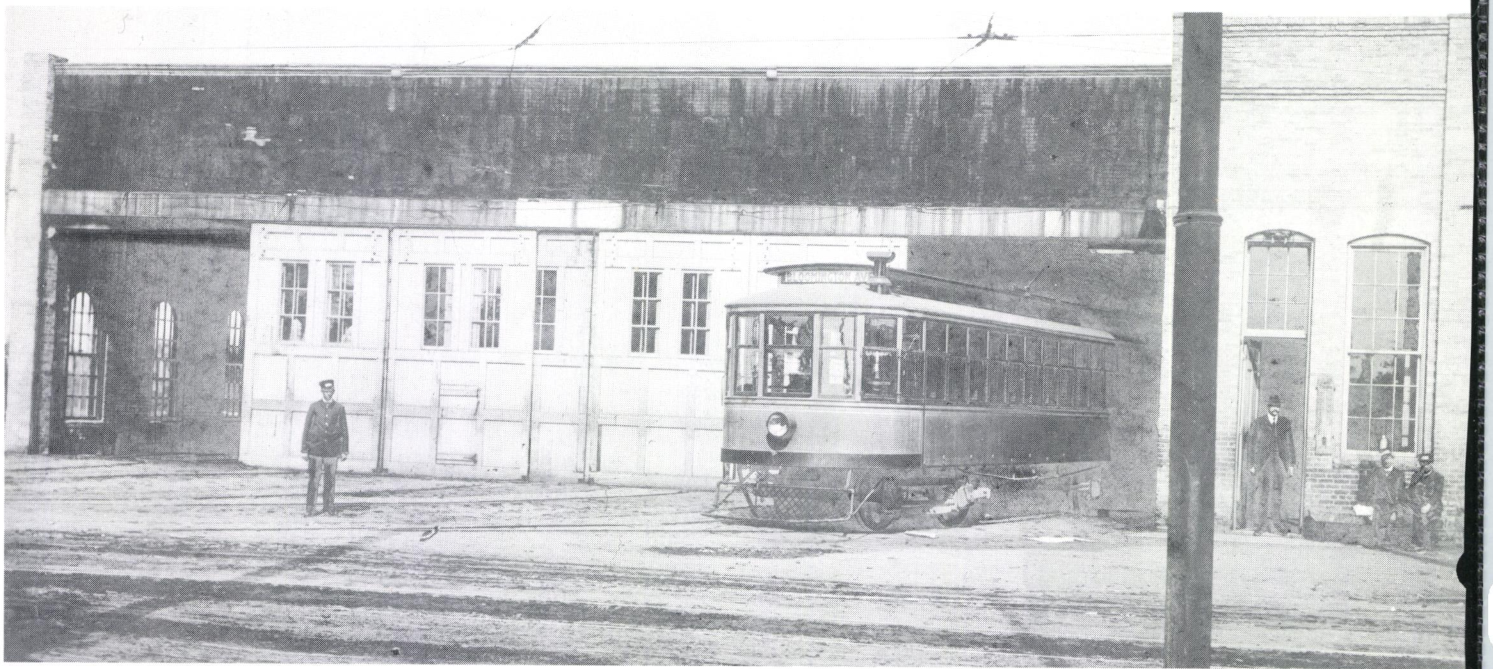
MINNEAPOLIS ST. RY.

31ST STREET STATION
1892


BLAISDELL AVE.
OIL TANKS
BRASS FOUNDRY 27' x 52'
BLACK-SMITH SHOP 42' x 52'
MAGNET ROOM
ARMA-TURE ROOM 52' x 53'
MACHINE SHOP
1 STORY - BRICK
94' x 110'
OFFICE & STOREHOUSE
3 STORY BRICK
63' x 94'
OIL HOUSE
OIL TANK
ENGINE & DYNAMO ROOM
BOILER ROOM
THESE TWO AREAS ARE
1 STORY - BRICK 80' x 155'
CHIMNEY
REPAIR ROOM (ROUNDHOUSE) 125' x 207'
1
2
3
4
5
6
7
8
9
10
11
12
TURNTABLE
24'6" RADIUS
TRACK SCALE
TRANSFER TABLE
CARHOUSE, ONE STORY - BRICK
155' x 193', CAPACITY 50 CARS
STORE HOUSE
FOREMEN & CONDUCTORS ROOM
OIL HOUSE
STORAGE HOUSE
31ST ST.
NICOLLET AVE.
TO 4TH AVE. SO.

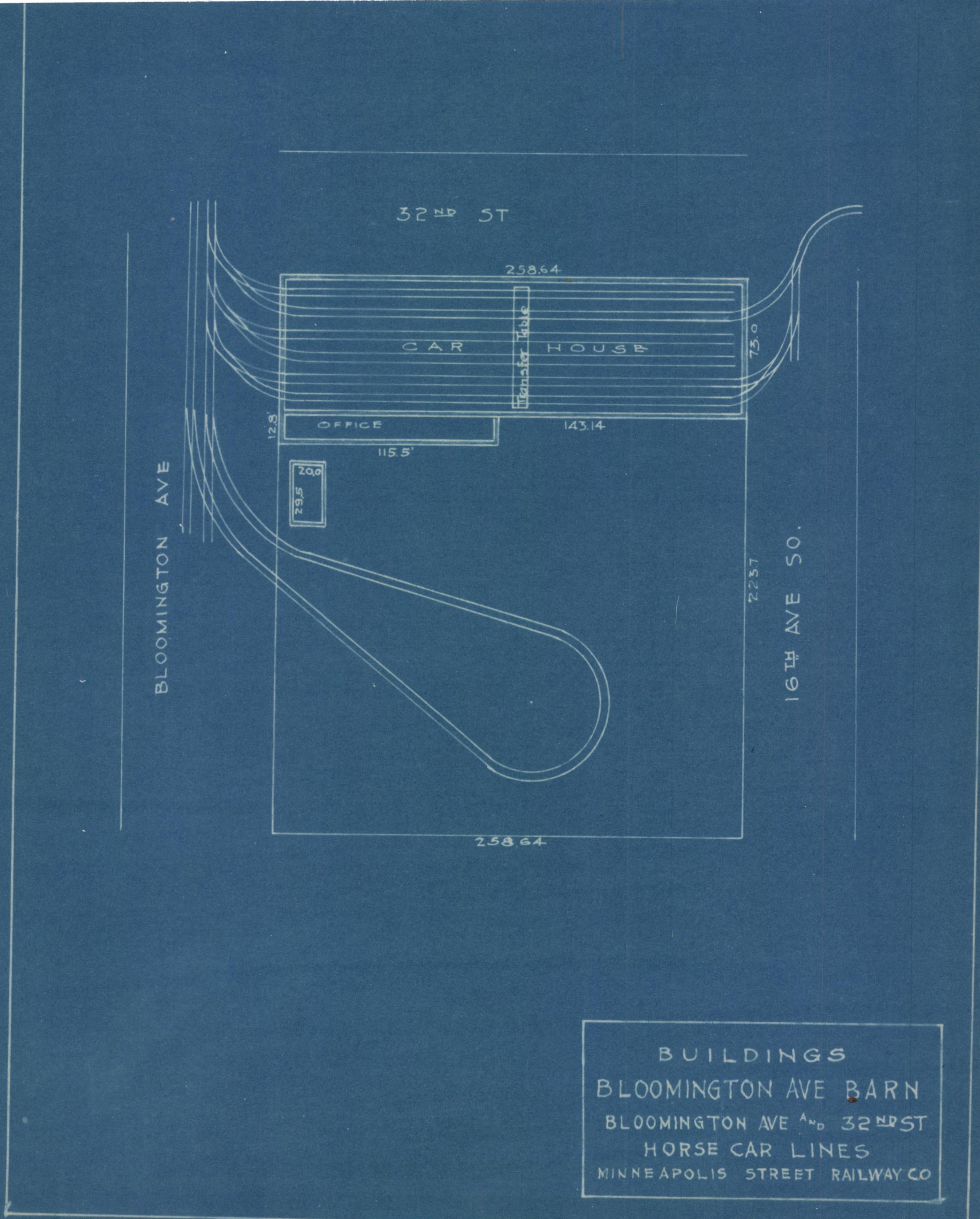


Above: East Side Station, Minneapolis, about 1901. (Edmund A. Brush; Minnesota Historical Society collection)
Below: Bloomington Station, Minneapolis. (Joe Hutchinson collection)



Bloomington Station
1891-1910

Located at 32nd St. E. and Bloomington Ave. S. this rather small facility was completed during 1891. It probably was originally intended for the proposed cablecar line on Bloomington Ave. S. However it was used as an electric car station from its completion in 1891 until replaced by the newly constructed Lake Street Station in 1910. The final streetcar operation occurred January 1, 1911. The property had been sold during December 1910.


32ND ST
258.64
CAR HOUSE
Transfer Table
73.0
12.8
OFFICE
143.14
115.5'
20.0
29.5
BLOOMINGTON AVE
223.7
16TH AVE SO.
258.64
BUILDINGS
BLOOMINGTON AVE BARN
BLOOMINGTON AVE AND 32ND ST
HORSE CAR LINES
MINNEAPOLIS STREET RAILWAY CO

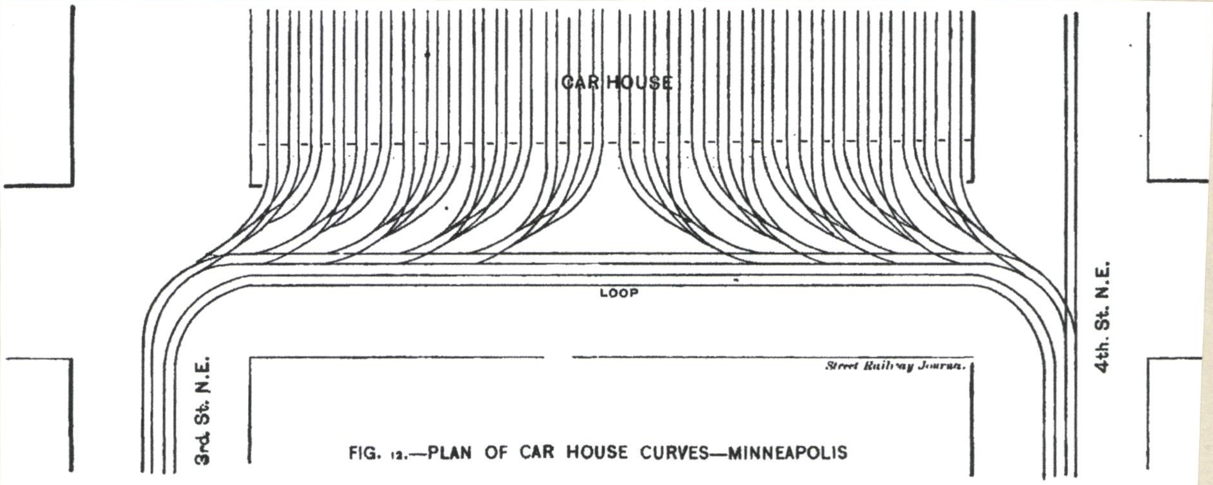
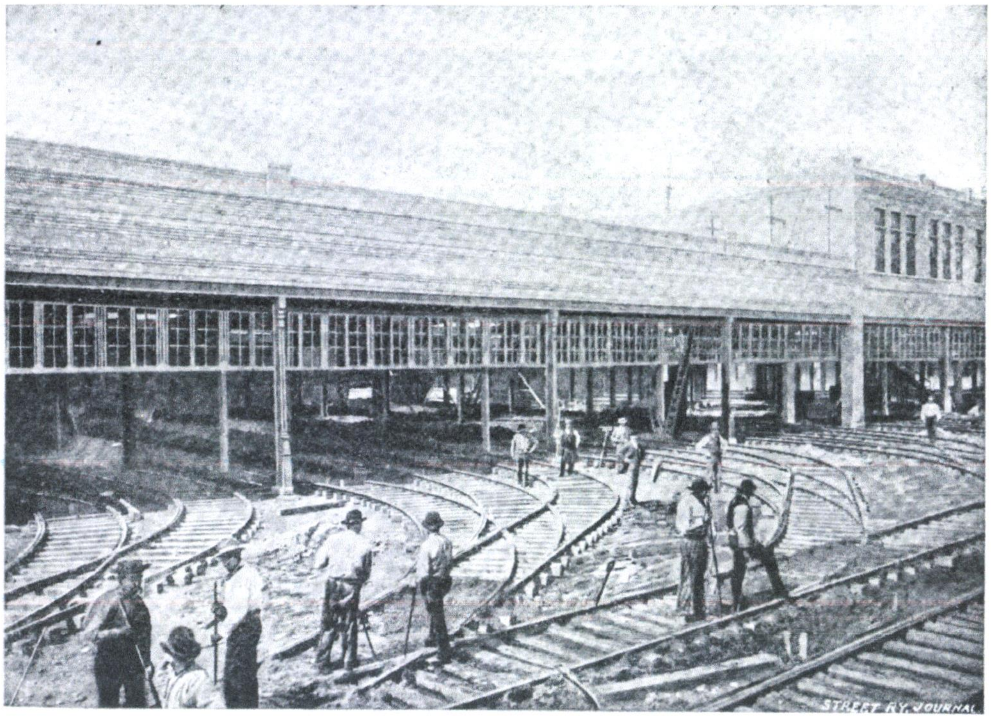

CAR HOUSE
LOOP
3rd. St. N.E.
4th. St. N.E.
Street Railway Journal.

FIG. 12.—PLAN OF CAR HOUSE CURVES—MINNEAPOLIS


STREET RY. JOURNAL

SRJ FIG. II.—VIEW OF CAR HOUSE—MINNEAPOLIS STREET RAILWAY. SEP 1891

East Side Station
Street Railway Journal
September 1891

The carhouse of the Minneapolis system, of which a one-half front view is shown in Figure 11, is 330 ft. front on 1st Ave. N.E. by 200 ft. deep and contains 30 tracks. The half toward 4th St. N.E. is provided with pits under each track for the cleaning and repairing of motors. In order to obtain as many tracks as possible, and at the same time allow the cars to enter the building squarely, the house was set back 10 ft. from the building line, and provided with a 10 ft. vestibule, giving 55 ft. between the nearest track and the doors.

The set of curves laid for entering this carhouse was designed by engineer W. F. Carr of the Mpls. St. Ry. Co. and is shown in Figure 12. This plan shows the main line on Central Ave. and its connecting track, with the loop and carhouse track, the inside curve being used exclusively as a loop for all east side cars, the outside for cars only when entering or going out from the carhouse.

As shown, one-half the entrance curves enter from 4th St.N.E., the other half from 3rd St. N.E., each half consisting of five sets of curves, and each set of three single curves. All sets of curves converge so as to join the main track with a single switch and mate, and are identical in every respect, having the same radii, tangents, switches, frogs, etc.

The radii of the single curves are respectively 40 ft. for the outside, 50 ft. the middle, and 45 ft. the inside, and unite as shown in the sketch. The tracks in the carhouse are 10 ft. 7 in. centers between single curves, and 10 ft. 10 in. between each set. The angles subtended by each curve are as follows: in the 40 and 50 ft. radius curves the central angles are 61 ft. while in the 45 ft. radius the central angle is 90 ft. The curves are all made of Johnson girder rail by the Johnson Company, the _______ five and one-half pound section being used for the outer and the seventy-five pound guard for the inner rail.

The entire work consisted of 264 pieces, and the engineer states each piece was plainly and carefully marked, causing no delay whatever in the construction.

The main idea in the study of these curves was to obtain as large a number of tracks as possible in the carhouse, and overcome the great objection of running through a vast number of switches and frogs. By this design turntables are done away with, and cars are handled without the least difficulty or detention.

East Side Station
1891-1954

This facility was built during 1891 on 1st Ave. N.E. between University Ave. N.E. and 4th St. N.E. The article from the September 1891 Street Railway Journal gives particulars.

The station was rebuilt during 1902. The September 13, 1902, issue of the Street Railway Journal contained a report. "The original building was enlarged and remodeled. The entire front was set back 40 feet, an addition 125' x 300', and a new central building for offices and trainmen's quarters erected, making the dimensions of the rebuilt structure 330' x 290'. The central building, two stories high, contains the offices and trainmens' quarters." Apparently this is when original tracks 14-17 were removed and replaced with the office structure. Tracks 18-30 then became 14-26.

Additional sums were expended on the building during 1905-1906. Track reconstruction also took place during 1906.

Car storage yard tracks 37-40 were built during 1916-1917. Tracks 37 and 40 were 300 l.f. long; tracks 38-39 were 285 l.f. long. The tracks were removed during 1945 and the property sold.

This was the last car station to remain in service. The final streetcars pulled-in during the early morning hours of Saturday, June 19, 1954. The property was sold to Mid-Continent Development & Construction Company which subsequently resold it to Superior Plating Inc., which still owns the building as of this writing (2005).

Minneapolis Tribune (1867-1908); Aug 17, 1902;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. B5

NEW CAR BARN ON EAST SIDE

OLD BUILDING HAS BEEN ENTIRELY REMODELED—ONE OF THE MOST COMPLETE IN THE UNITED STATES.

CLUB HOUSE FOR EMPLOYES

MEN GIVEN ADVANTAGE OF READING AND BATH ROOMS FREE—DETAILS OF INTERESTING CONSTRUCTION.

One of the most interesting of the Minneapolis buildings now being constructed is the car barn of the Twin City Rapid Transit Company on the property bounded by University avenue, Fourth street and First and Second avenues northeast, the plans of which were drawn by Kees & Colburn, and which is being built by John Wunder.

The structure is not an entirely new one, but the old building has been so enlarged and remodeled that few traces remain of the original one. The entire front has been set back forty feet, an addition 125x330, and a new central building for offices and men's quarters erected, making the dimensions of the great modern structure 226x230.

The cars are cared for in two long wings flanking the new central building. The entire floor space of these immense wings was excavated five feet below the floor surface. A solid concrete floor was then laid over the excavated surface, doing away with all danger of damp and cold from the earth and making the air in the car barns as pure and warm in winter as in the most carefully constructed dwelling.

Trestle work of heavy pine timbers was then built up five feet to the floor level, on which were laid the many parallel tracks to carry the cars into shelter. Between the rails are open spaces for the convenience of repair men working on the motors or trucks. The trestle work is capable of sustaining the weight of an ordinary railway locomotive.

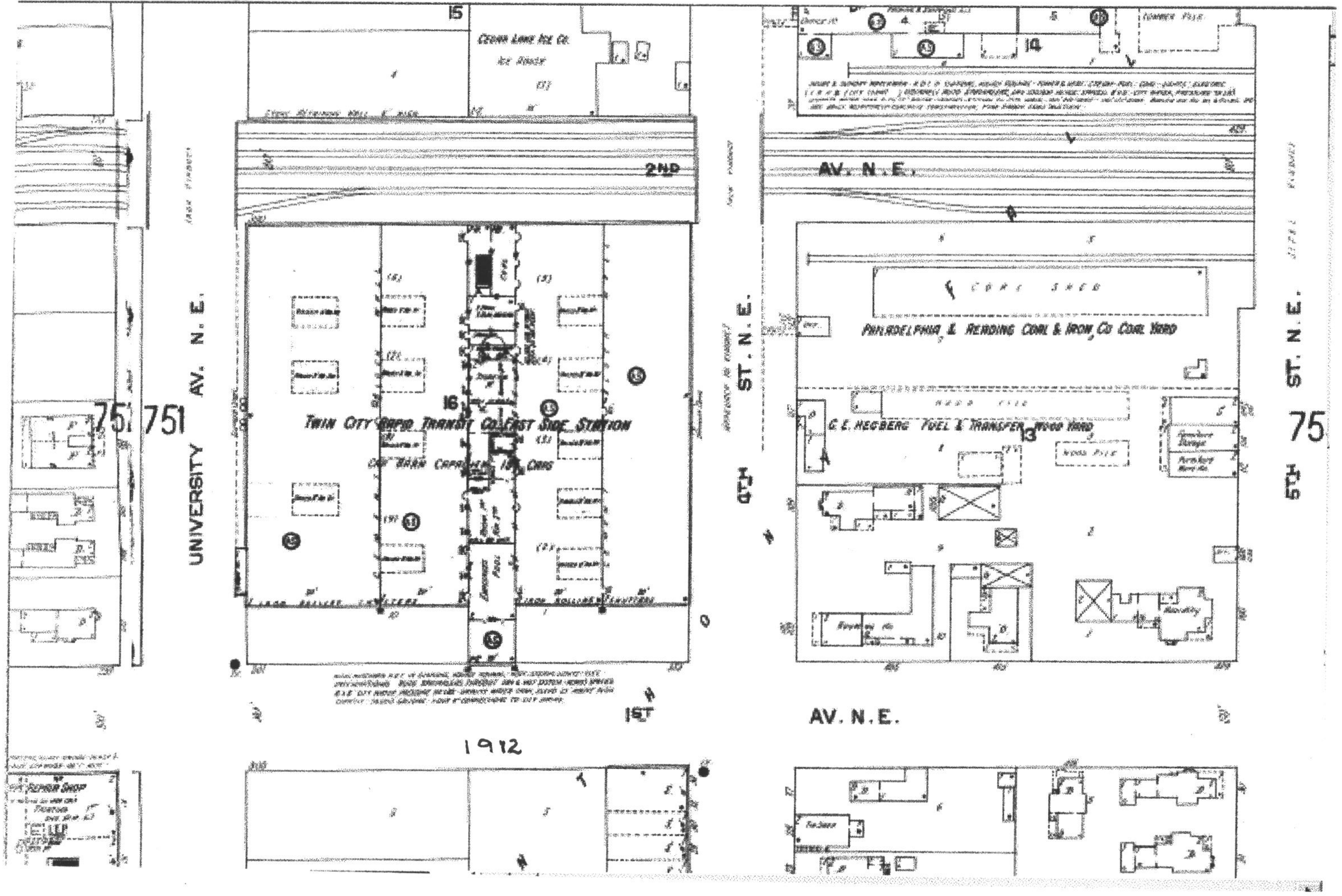
Nothing has been omitted to make these great rooms as completely equipped quarters for the storage of cars as any in the United States. They are lighted by elevated skylights, 9x24x32, and the open fronts may be closed from storm and weather by rolling iron shutters.

The lines that make use of these quarters are the Eighth and Central, Western and Second, Como-Harriet, Bryn Mawr and Eighth Street, Monroe and Lyndale, Minnehaha and Oak and Kenwood.

The central building, which is two stories high, contains the offices and men's quarters. These latter show, on the part of the company, an unusual consideration for the comfort, health and entertainment of its employes. It is, in short, a club for the motormen and conductors when off duty. Just back of the airy offices is the main room for the men, twenty-four feet high, with a balcony on three sides. Here will be easy chairs and tables for games, books and magazines, etc. Around the walls, both on the main floor and the balcony, are 650 handsome roomy lockers, where the men may keep under lock and key clothing, lunch boxes and other impedimenta required in their day's work.

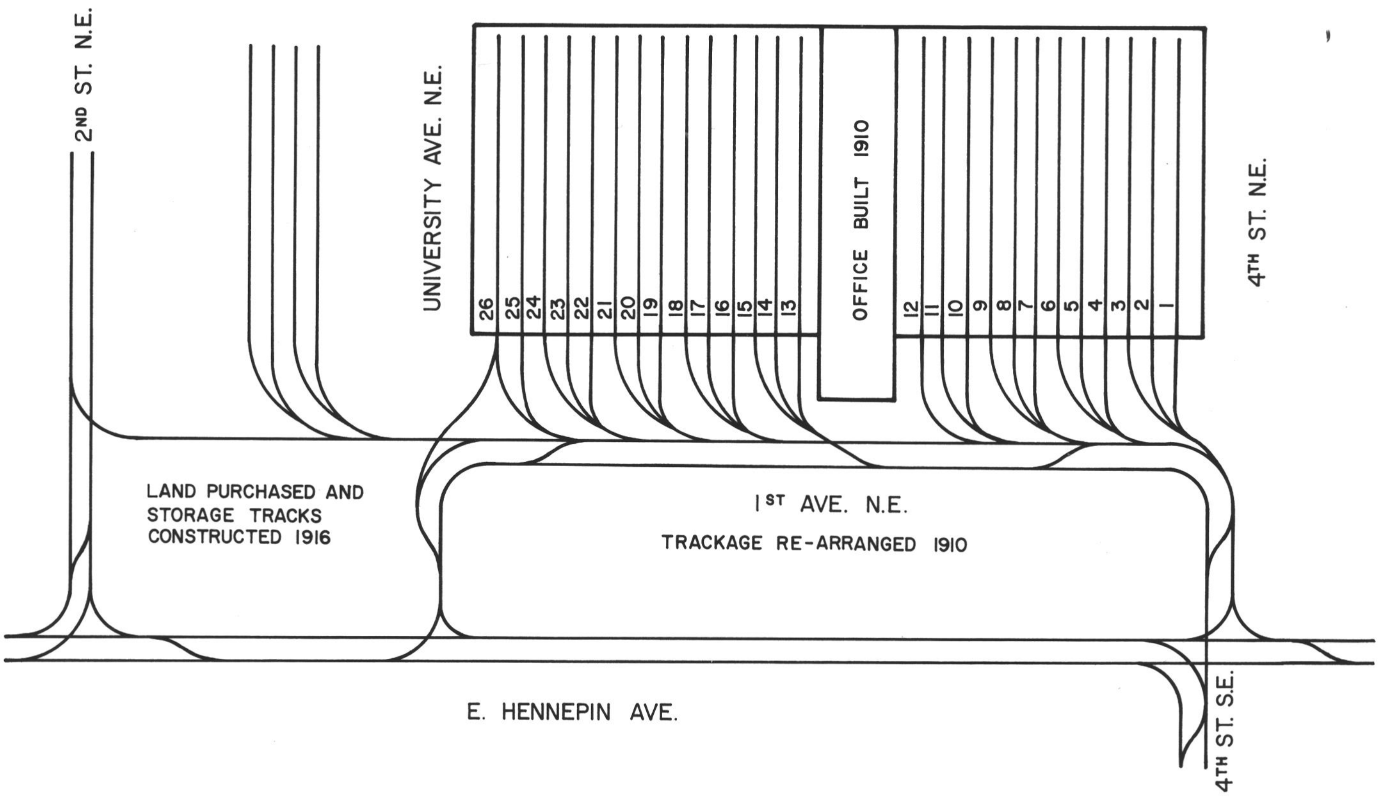
Back of this room are the dressing and bath rooms, the latter including an apartment equipped with the latest type of shower baths, all of which will be open to the employes at all times and without cost.

Still further back are the oil room, dynamo room and boiler room. The heating plant is of especial interest, as it is planned to have the temperature of the entire building, car barns and all, as comfortable in winter as in summer.

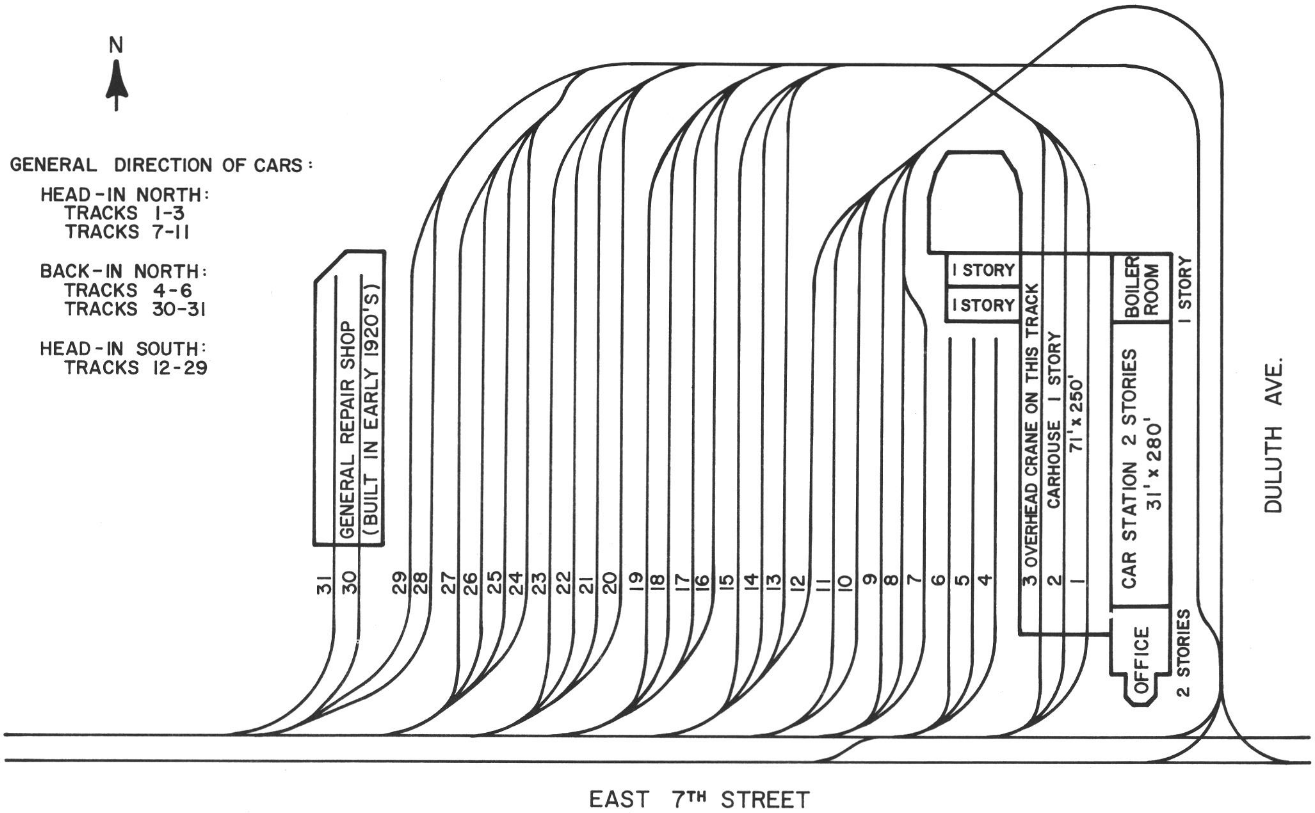


1912

MINNEAPOLIS ST. RY. EAST MINNEAPOLIS "EASTSIDE" STATION 1916 AS REBUILT


2ND ST. N.E.
UNIVERSITY AVE. N.E.
26
25
24
23
22
21
20
19
18
17
16
15
14
13
OFFICE BUILT 1910
12
11
10
9
8
7
6
5
4
3
2
1
4TH ST. N.E.
LAND PURCHASED AND
STORAGE TRACKS
CONSTRUCTED 1916
1ST AVE. N.E.
TRACKAGE RE-ARRANGED 1910
E. HENNEPIN AVE.
4TH ST. S.E.

ST. PAUL CITY RY. DULUTH AVE. STATION AS REBUILT


N
GENERAL REPAIR SHOP
(BUILT IN EARLY 1920'S)
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
I STORY
I STORY
3 OVERHEAD CRANE ON THIS TRACK
2
1
CARHOUSE I STORY
71' x 250'
BOILER ROOM
CAR STATION 2 STORIES
31' x 280'
I STORY
OFFICE
2 STORIES
DULUTH AVE.
EAST 7TH STREET

GENERAL DIRECTION OF CARS:

HEAD-IN NORTH:
TRACKS 1-3
TRACKS 7-11

BACK-IN NORTH:
TRACKS 4-6
TRACKS 30-31

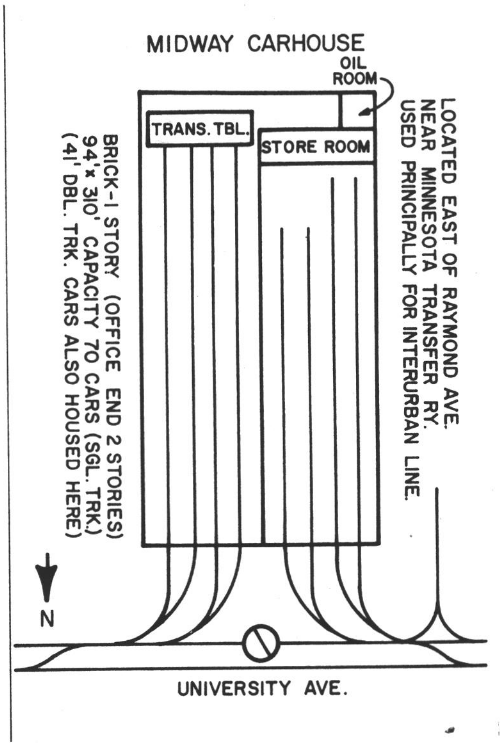
HEAD-IN SOUTH:
TRACKS 12-29

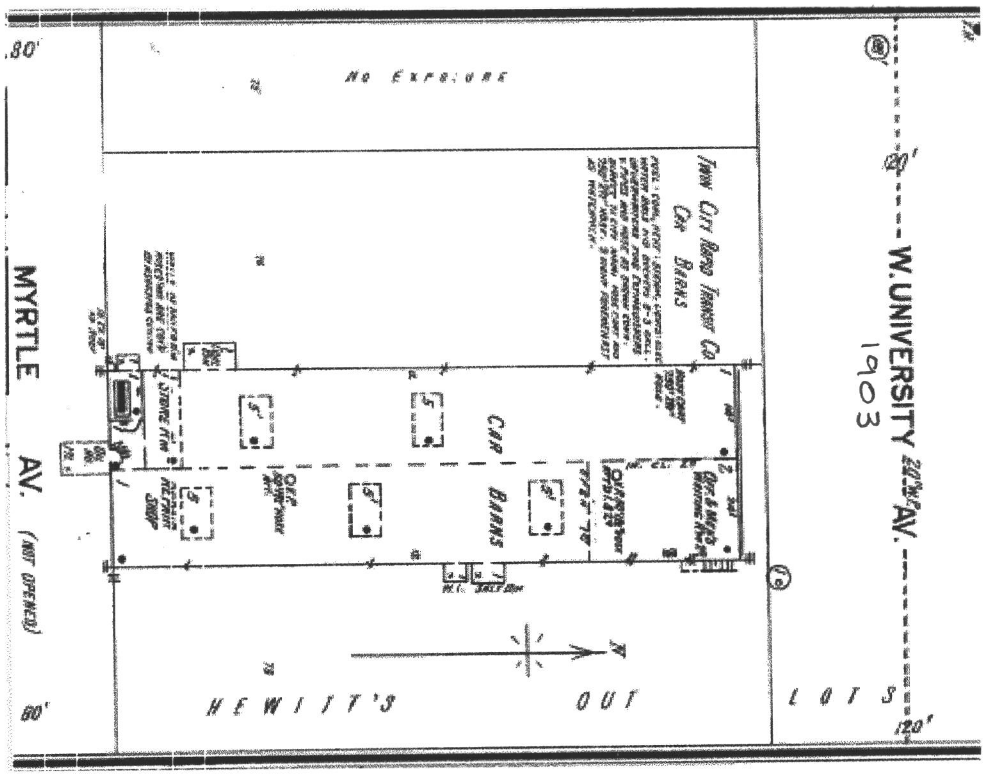
(REBUILDING OCCURRED SOMETIME DURING THE 1902-1912 PERIOD)

St.PAUL CITY RAILWAY

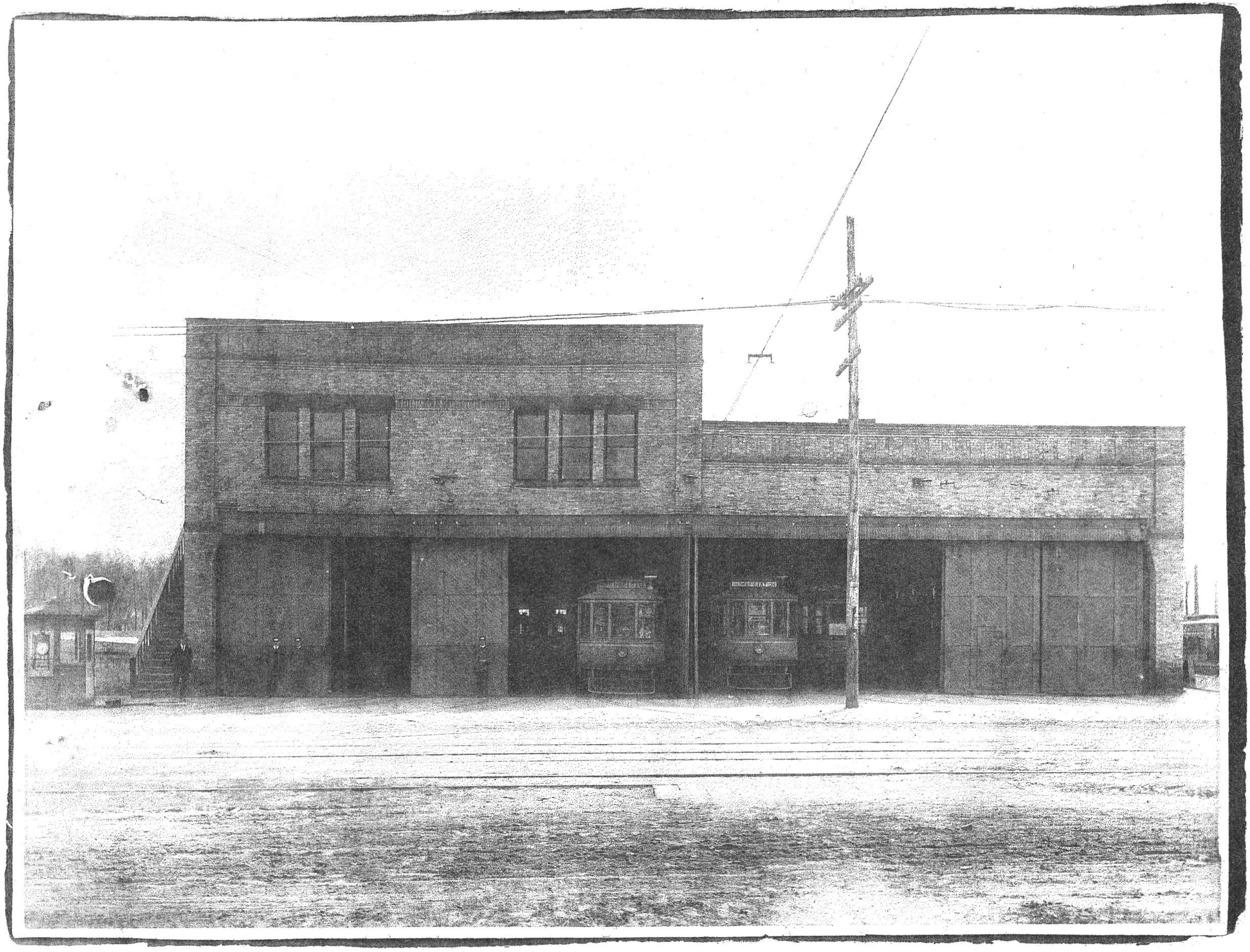
Midway Station
1891-1907

Real Estate: Lots 76-77, Hewett Outlots, First Division, purchased September 1891 from Calvin and Cora Goodrich. Located on the south side of University Ave. between Carlton St. and LaSalle St. The brick building measured 94' x 310'; the carhouse section was one-story while the office section was two-story. This facility was replaced by Snelling Station in June 1907. The property was sold October 1908 to Barret & Zimmerman. (As of 1998, extensively remodeled, was devoted to office space.)


MIDWAY CARHOUSE
OIL ROOM
TRANS. TBL.
STORE ROOM
LOCATED EAST OF RAYMOND AVE.
NEAR MINNESOTA TRANSFER RY.
USED PRINCIPALLY FOR INTERURBAN LINE.
BRICK-1 STORY (OFFICE END 2 STORIES)
94'x 310' CAPACITY 70 CARS (SGL. TRK.)
(41' DBL. TRK. CARS ALSO HOUSED HERE)
N
UNIVERSITY AVE.


80'
MYRTLE AV. (NOT OPENED)
No Exposure
Twin City Rapid Transit Co.
Car Barns
CAR BARNS
Store Rm
Repair Shop
Off. & Wait'g Rm.
W. UNIVERSITY 20TH AV.
HEWITT'S OUT LOTS
120'
N

1903



E. 7th Street Station
Duluth Avenue Station
1893-1952

This facility was converted to an electric car station from a cablecar house in 1893 when the "East 7th Street" cable line was electrified.

A sizeable amount of track construction took place during 1904.

A rebuilding of the station was peformed from 1905 through 1907, with the majority of the work done during 1906. Apparently all of the original structure was retained with tracks 4 thru 11 going into the building. (Tracks 4 thru 6 were used for storage of open cars and work cars.) Tracks 12 thru 31 were newly built, although tracks 26 thru 31 were not accessible from the rear. In 1906 a crossover was installed on E. 7th St. from the westbound main track to the eastbound main track just west of the ladder track switch for yard tracks 16 thru 19.

Additional track construction was performed during 1909-1910. An office addition was built during 1912-1913. During 1913-1914 the special work in front of the station for tracks 4 thru 11 and 20 thru 27 was rebuilt. The original building containing tracks 4 thru 11 was demolished at this time. Tracks 28 thru 31 were made accessible from the rear during 1913 with the installation of connecting tracks and special work. Rear entrance curves, special work and crossing for tracks 7 thru 12 were also built during 1913-1914. One old building, the one-story, frame shed 26' x 32', was dismantled January 1914. The crossover on E. 7th St. installed in 1906 was removed in 1917.

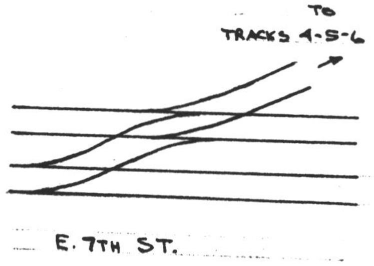
Duluth St. was renamed Duluth Ave. so the name of the car station was changed 9-19-1918 to Duluth Avenue Station.

The inspection and repair shop building on tracks 30-31 was completed in November 1920. Special work on the rear track connections was removed in the process. This building was intended for maintenance of the Stillwater Division cars. It was never used for that purpose as an overhead crane on carhouse track 3 was deemed adequate.

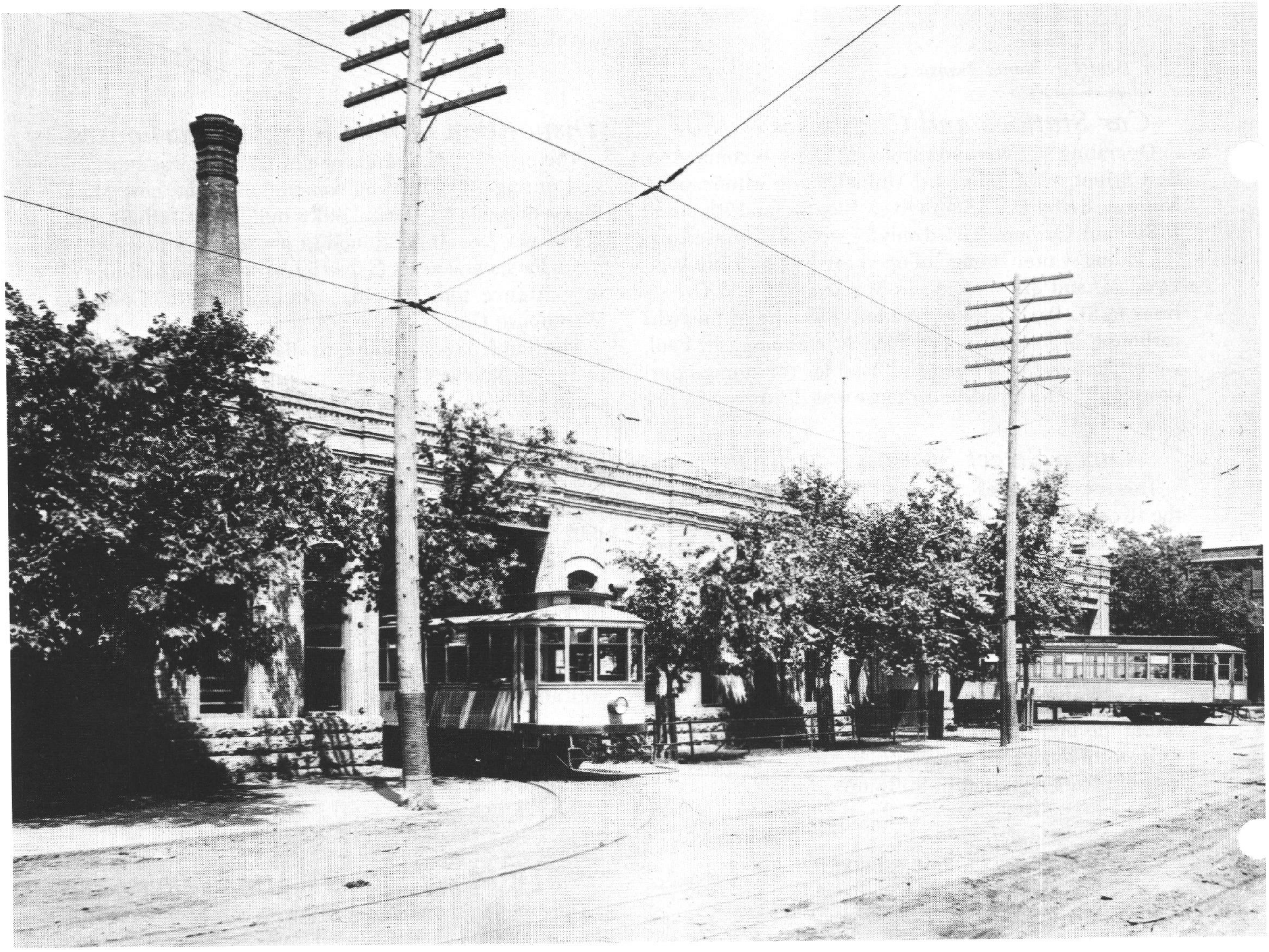
The two-track inspection building was converted to a bus garage in 1950. Special work on E. 7th St. for tracks 24 thru 31 were removed during November 1950 as that track space had been taken over for bus storage.

Streetcar operations ended May 17, 1952. The property was sold complete to the Mid-Continent Development & Construction Company. The buildings were demolished and the real estate sold.

ST. PAUL CITY RY.
E. 7TH ST. STATION
(PAGE 126)

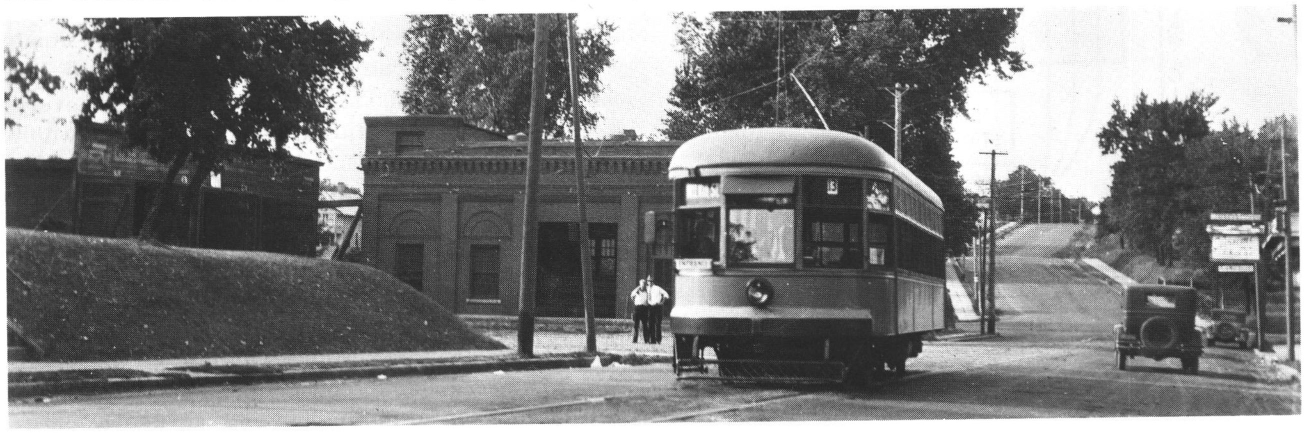


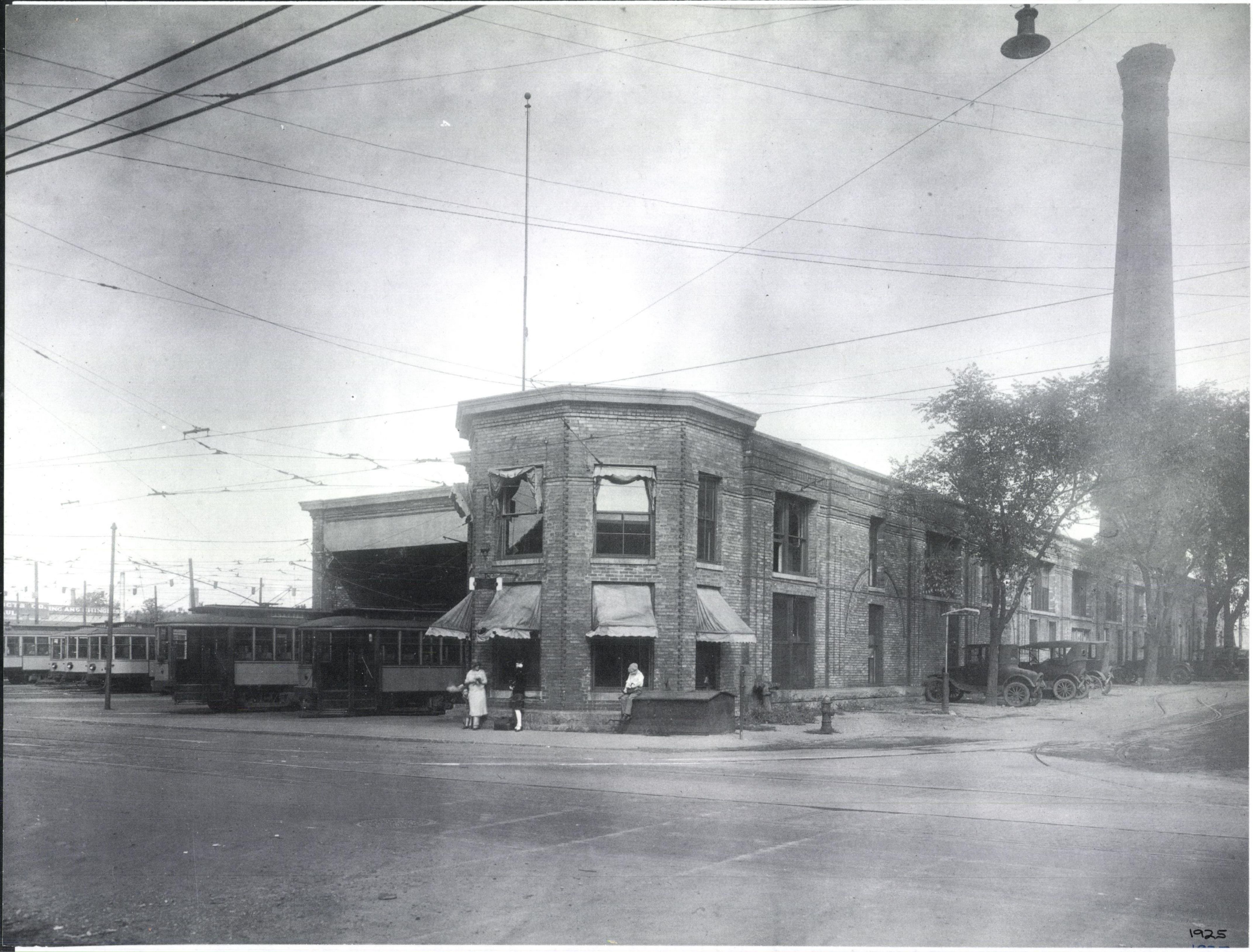
CORRECT LAYOUT OF
CROSSOVER ON E. 7TH ST.



Above: 7th St. Station, St. Paul, about 1901. The cable slot rail of the eastbound track had not yet been removed. Car 882, left, has a glass deck roof destination sign "7th St." (white letters on black background), while car 785, right, carries a "White Bear & Stillwater" roof sign above the body side windows. (Edmund A. Brush; Minnesota Historical Society collection)

Below: Buildings at Owen St. Station, Stillwater, comprised the frame carhouse, left, and the substation, center. This photograph was taken August 10, 1932, the last day of operation on the "St. Paul-Stillwater" line. The lightweight car on the local "Wilkin St." line is turning on the wye prior to pulling in the carhouse. (John Runk; Joe Hutchinson collection)




CT & CO. INC AND

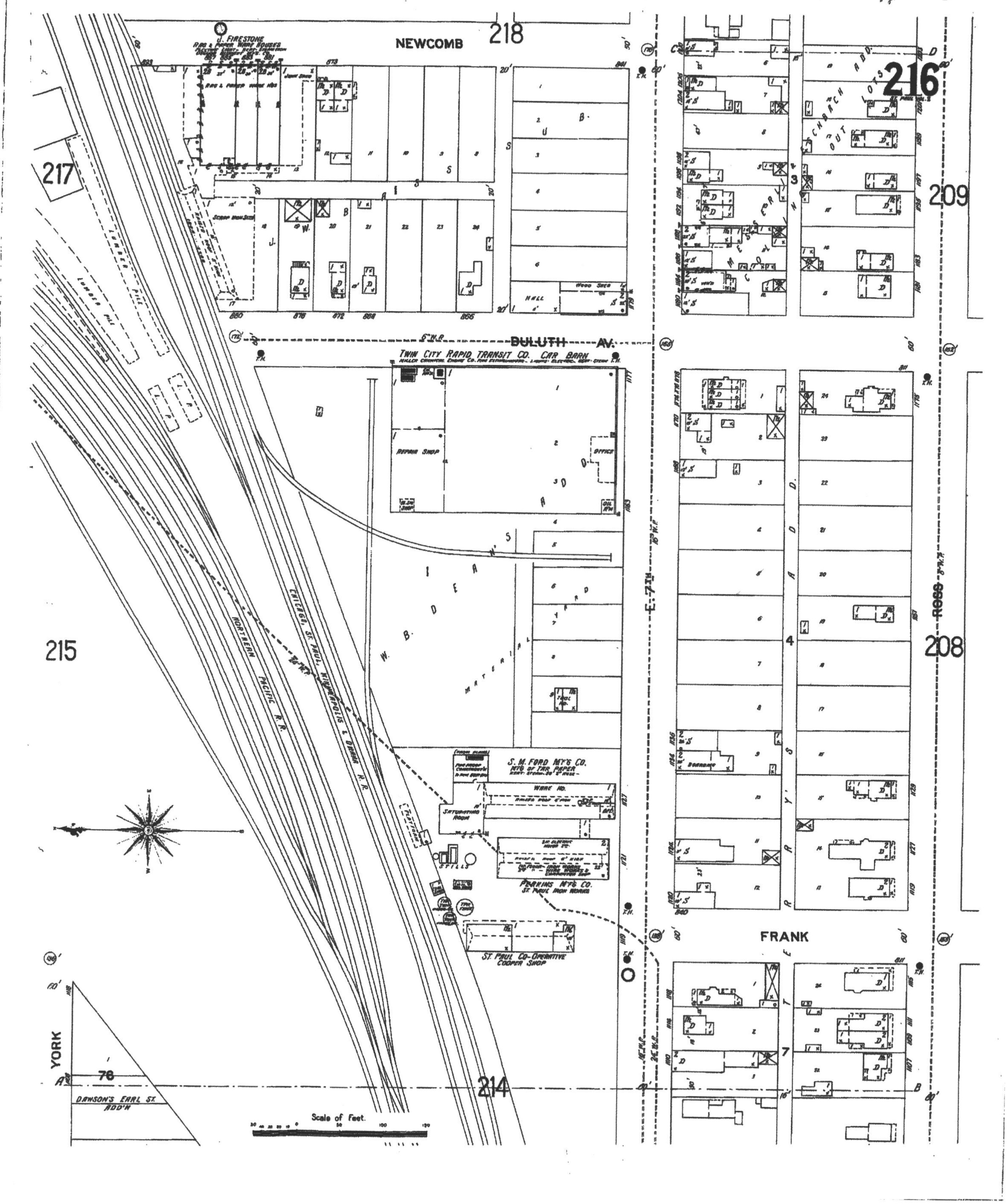
1925

ADDITIONAL COST OF EAST 7th ST. STATION - APRIL 1902 TO DEC. 31, 1912.

Track and Construction Pay Roll	$ 7,635.05
Private Pay Roll	705.78
Track & Paving Material	16,016.32
Geo. J. Grant - Contract	17,478.77
Extra work - Geo. J. Grant	4,195.95
Dwyer Heating & Plumbing Co. Contract	5,060.00
Extra work Dwyer H & P Co.	509.83
Geo. Cook	7,721.23
Kellogg MacKay & Cameron	3,089.50
Lighting Grounds	802.15
Electric Crane	249.78
Building Changes & Miscellaneous	1,823.22
Painting interior	557.44
6 Kinnear doors	1,062.85
Conduit	136.48
Sand dryer	127.14
Improvements - Dec. 1909	1,507.71
Improvements - 1910	633.20
Office Fixtures	260.00
Table, Time Card Case & Benches	150.00
Lockers	389.03
Build Office Additions	284.66
Stromberg Chronograph	157.34
Electric Operated Roller doors, transoms, etc.	5,251.46
Miscellaneous	76.81
Build Club Rooms	7,398.03
Club Room Equipment	1,466.98
	$ 84,746.71

(This is all the information available on cost of this Station.)

1903


NEWCOMB
218
J. FIRESTONE
RAG & PAPER WARE HOUSES
RAG & PAPER WARE HOS.
JUNK SHED
SCRAP IRON SHED
LUMBER PILE
W. J. B. A. I. S.
S. U. B.
HALL
WOOD SHED
880
876
872
868
866
873
841
217
DULUTH AV.
TWIN CITY RAPID TRANSIT CO. CAR BARN
REPAIR SHOP
OFFICE
OIL RM.
W. B. DEAN'S ADD.
MATERIAL YARD
TOOL HO.
CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA R.R.
NORTHERN PACIFIC R.R.
215
S. M. FORD MF'G CO.
MF'G OF TAR PAPER
WARE HO.
SATURATING ROOM
PLATFORM
STILLS
TAR TANK
PERKINS MF'G CO.
ST. PAUL IRON WORKS
ST. PAUL CO-OPERATIVE COOPER SHOP
E. 7TH
FRANK
ROSS
216
209
208
214
MESSERLY'S CONVENT ADD.
KERN'S OUT LOTS
ARRAY'S ADD.
3
4
7
YORK
A
B
C
D
76
DAWSON'S EARL ST. ADD'N
Scale of Feet.
0 100 150
T.H.
BOARDING

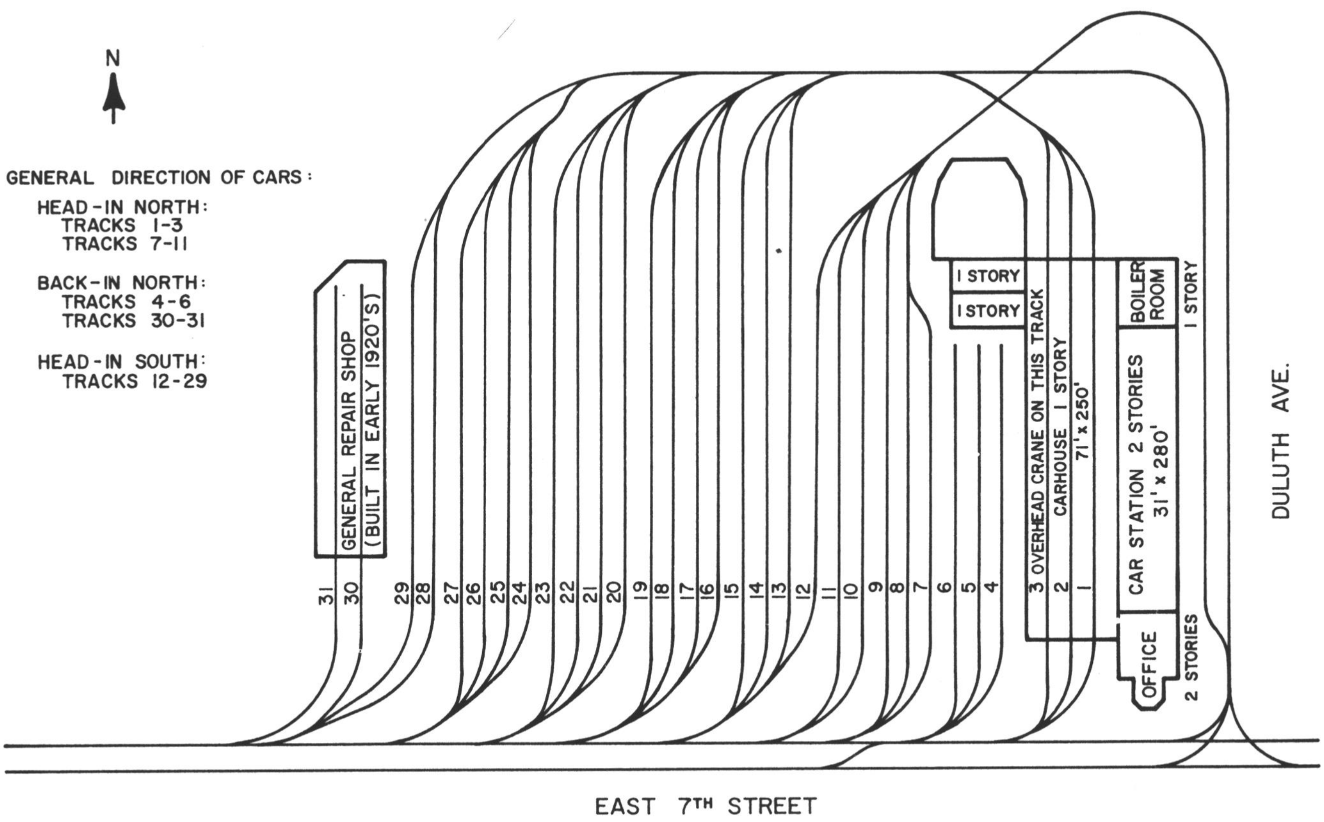
ST. PAUL CITY RY. DULUTH AVE. STATION AS REBUILT

GENERAL DIRECTION OF CARS:

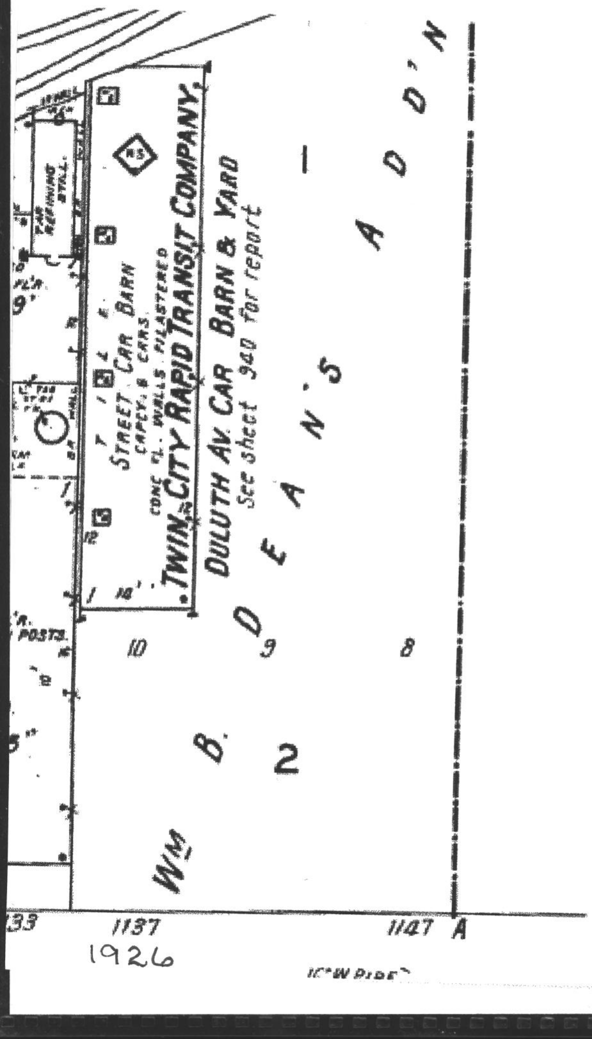
HEAD-IN NORTH:
TRACKS 1-3
TRACKS 7-11

BACK-IN NORTH:
TRACKS 4-6
TRACKS 30-31

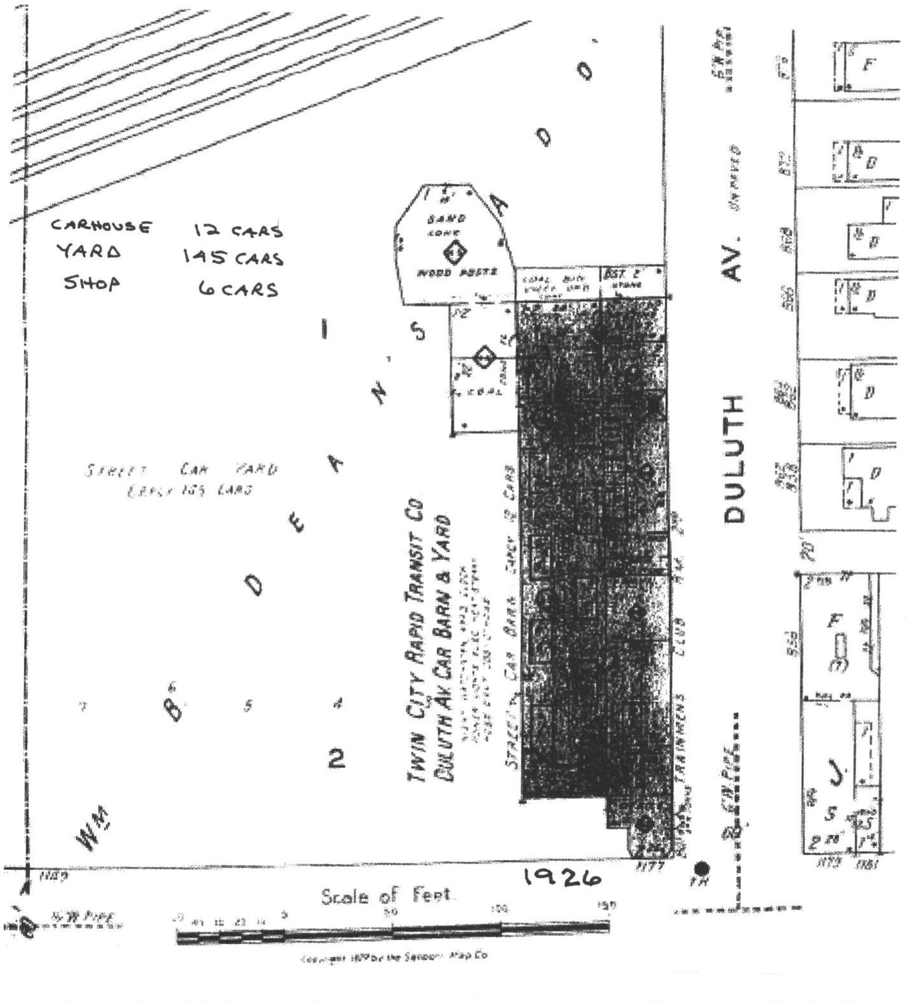
HEAD-IN SOUTH:
TRACKS 12-29


N
GENERAL REPAIR SHOP
(BUILT IN EARLY 1920'S)
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3 OVERHEAD CRANE ON THIS TRACK
2
1
CARHOUSE 1 STORY
71' x 250'
1 STORY
1 STORY
BOILER ROOM
CAR STATION 2 STORIES
31' x 280'
1 STORY
OFFICE
2 STORIES
DULUTH AVE.
EAST 7TH STREET

(REBUILDING OCCURRED SOMETIME DURING THE 1902-1912 PERIOD)


CAR REPAIRING STALL
STREET CAR BARN
CAPCY 18 CARS
CONC. FL. WALLS PILASTERED
TWIN CITY RAPID TRANSIT COMPANY,
DULUTH AV. CAR BARN & YARD
See sheet 940 for report
WM B. DEAN'S ADD'N
10
9
8
2
1137
1147
A

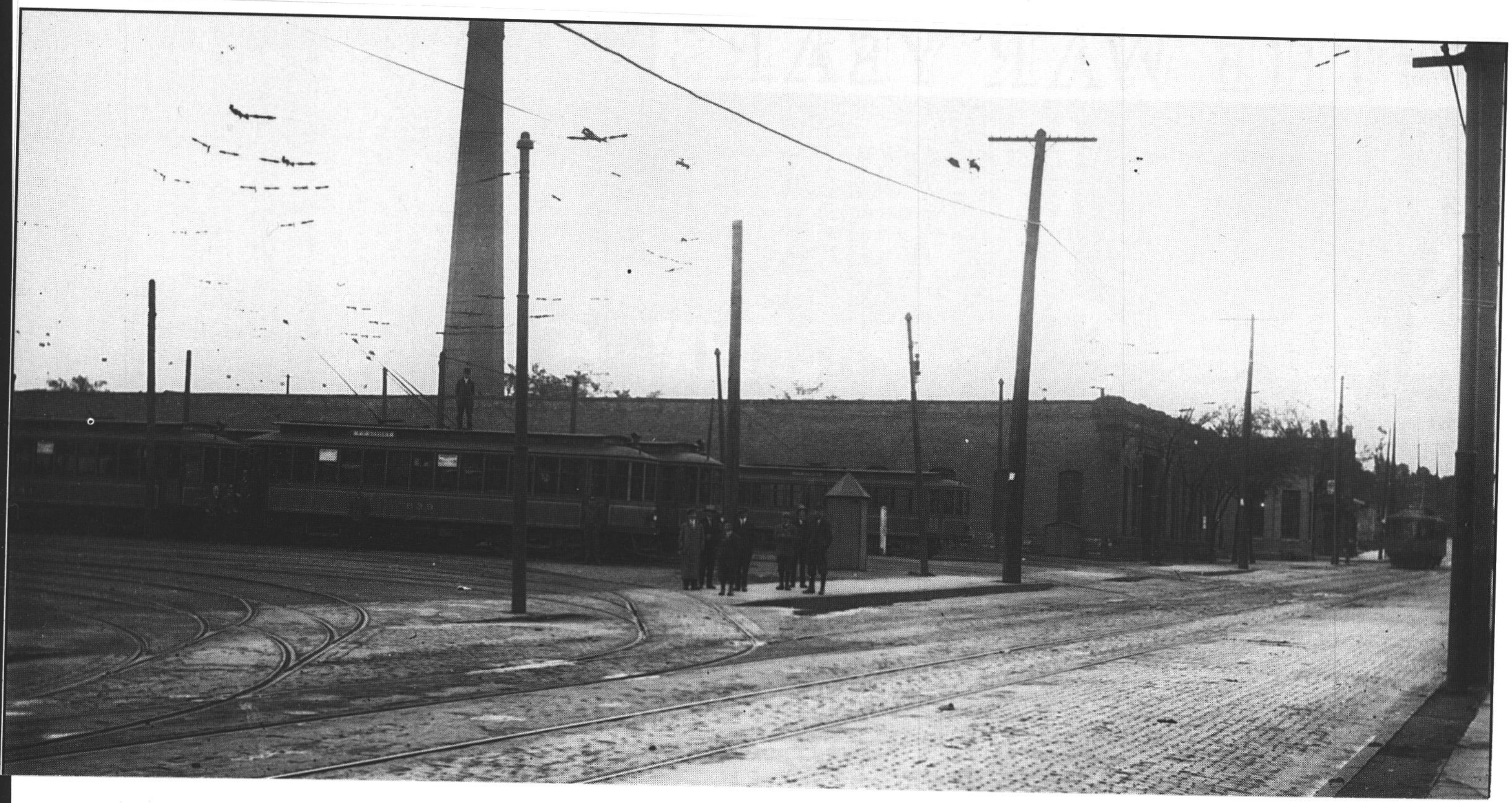
1926


SAND CONE
WOOD POSTS
COAL
STREET CAR YARD
CAPCY 145 CARS
TWIN CITY RAPID TRANSIT CO
DULUTH AV CAR BARN & YARD
STREET CAR BARN CAPCY 12 CARS
TRAINMENS CLUB
WM B. DEAN'S ADD'N
2
DULUTH AV.
Scale of Feet
Copyright 1927 by the Sanborn Map Co

CARHOUSE 12 CARS
YARD 145 CARS
SHOP 6 CARS

1926

AVERY® PV119ED



MINNEAPOLIS & St.PAUL SUBURBAN RAILROAD

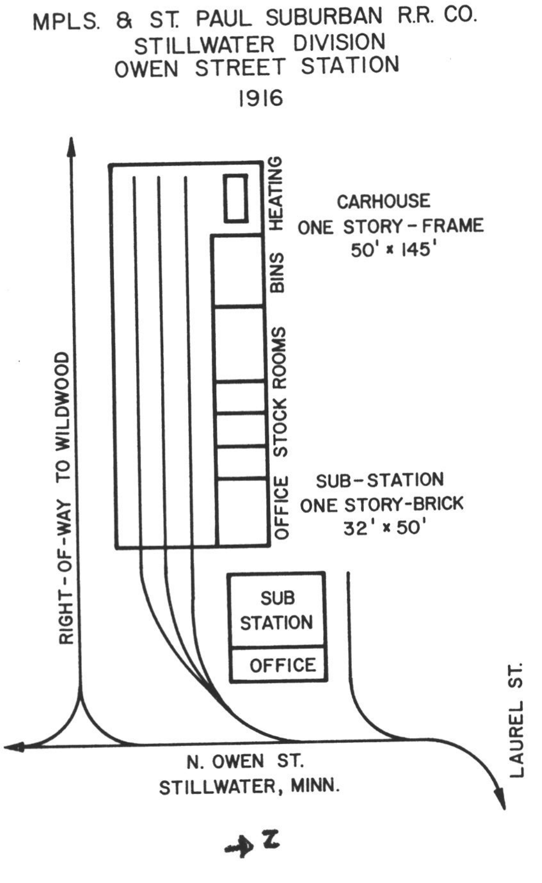
Owen Street Station
Stillwater
1899-1932

This frame structure was built during late 1899 for operation of the local street railway system in Stillwater. It was always referred to as Owen St. Station although the correct name of the street was/is Owens Street. This correct name does appear on company right-of-way maps.

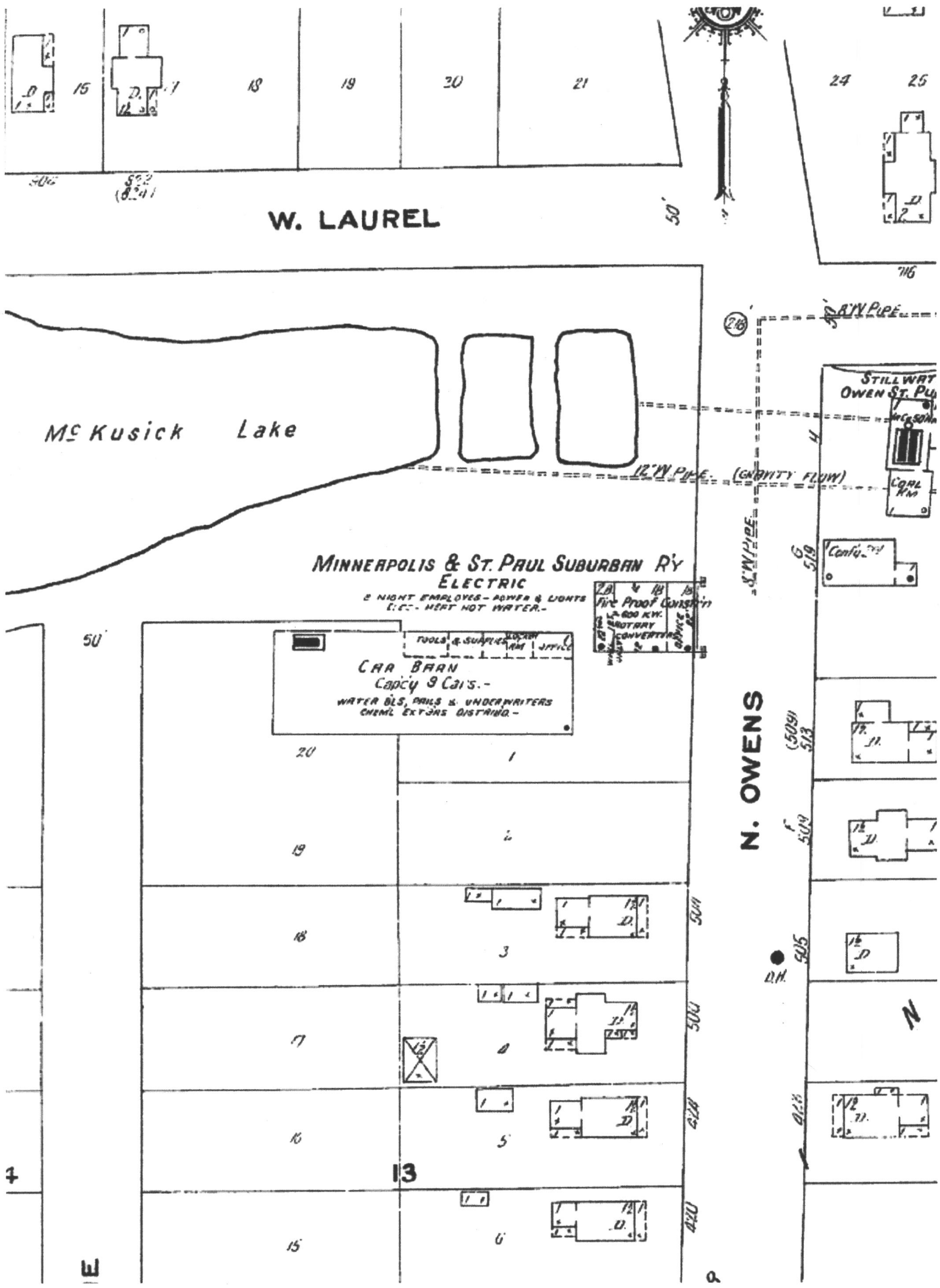
A company memorandum dated 1910 indicated the building was in poor condition and they were reluctant to store any of the high-speed suburban cars inside the structure due to the risk of fire. Apparently some renovations were subsequently undertaken as the Stillwater Division work car, wire car and snow plow were assigned here as were one or two of the high-speed suburban cars.

The storage track along the north side of the building was built during 1920-1921.

The last streetcars operated August 10, 1932. The carhouse was demolished. The substation building was sold and remodeled into a residence (still used as such in 1998).


MPLS. & ST. PAUL SUBURBAN R.R. CO.
STILLWATER DIVISION
OWEN STREET STATION
1916
HEATING
BINS
STOCK ROOMS
OFFICE
CARHOUSE
ONE STORY - FRAME
50' × 145'
SUB-STATION
ONE STORY-BRICK
32' × 50'
RIGHT-OF-WAY TO WILDWOOD
SUB
STATION
OFFICE
LAUREL ST.
N. OWEN ST.
STILLWATER, MINN.
N

Stillwater


W. LAUREL
N. OWENS
Mc Kusick Lake
MINNEAPOLIS & ST. PAUL SUBURBAN R'Y
ELECTRIC
2 NIGHT EMPLOYES - POWER & LIGHTS
ELEC. - HEAT HOT WATER.-
Fire Proof Const'n
2-600 KW. ROTARY CONVERTERS
OFFICE
CAR BARN
Cap'cy 9 Cars.-
WATER BLS, PAILS & UNDERWRITERS CHEM'L EXT'RS DIST'RI'D.-
TOOLS & SUPPLIES
LOCKER RM
OFFICE
12"W. PIPE. (GRAVITY FLOW)
8"W. PIPE
8"W PIPE
STILLWAT
OWEN ST. PU
COAL RM
Conf'y
D.H.
50'
50'
13
15
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19
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21
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25
716
519
(509) 513
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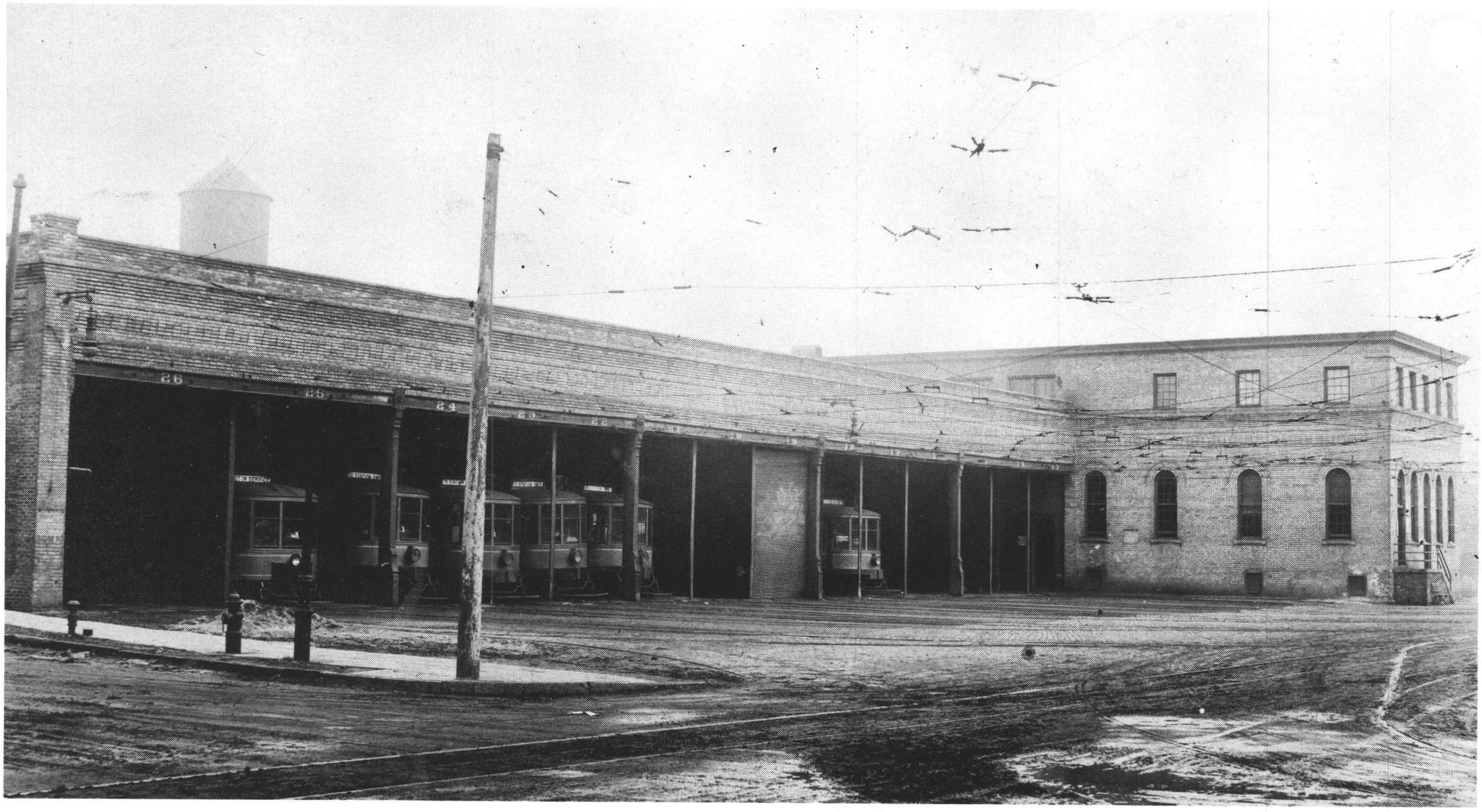
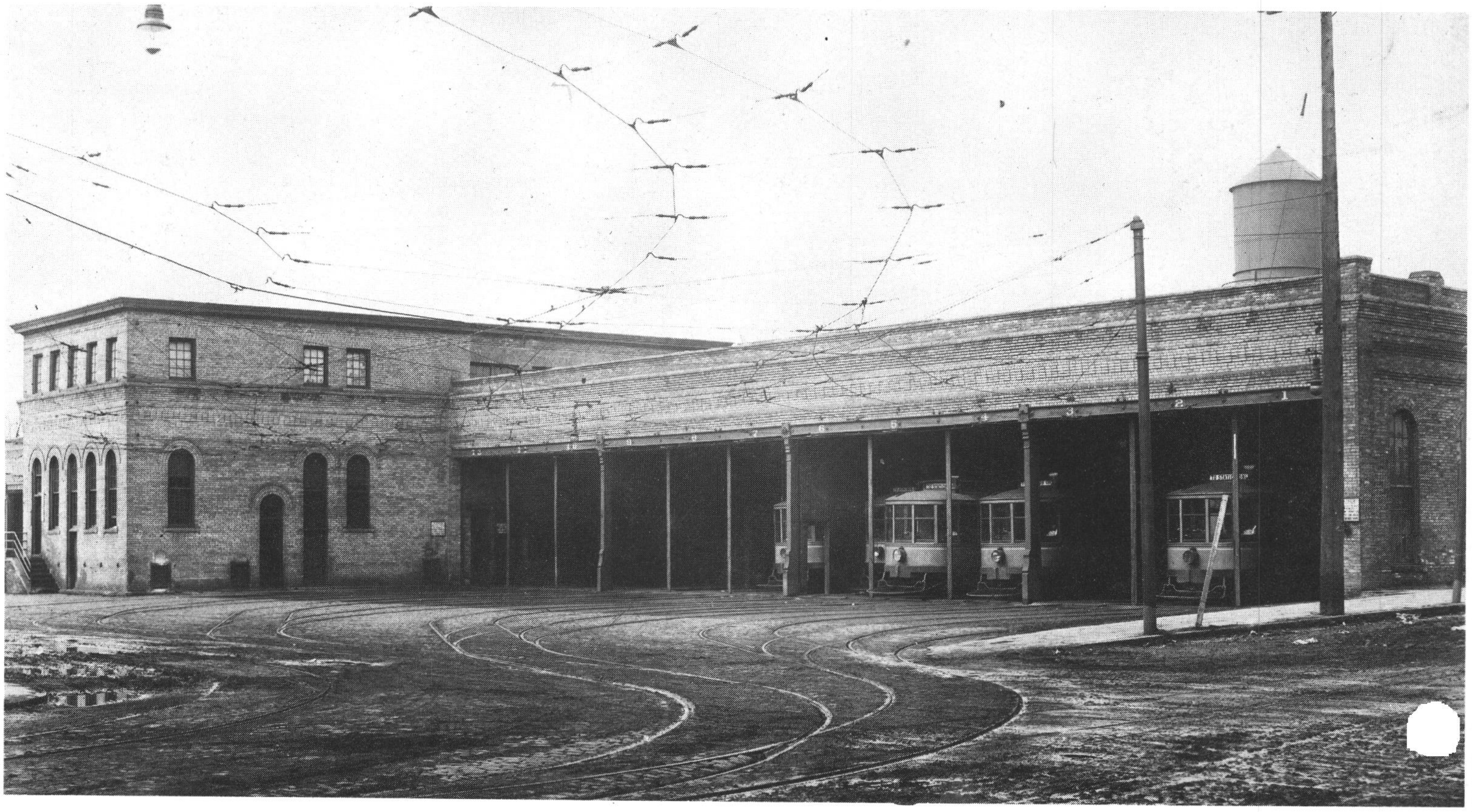
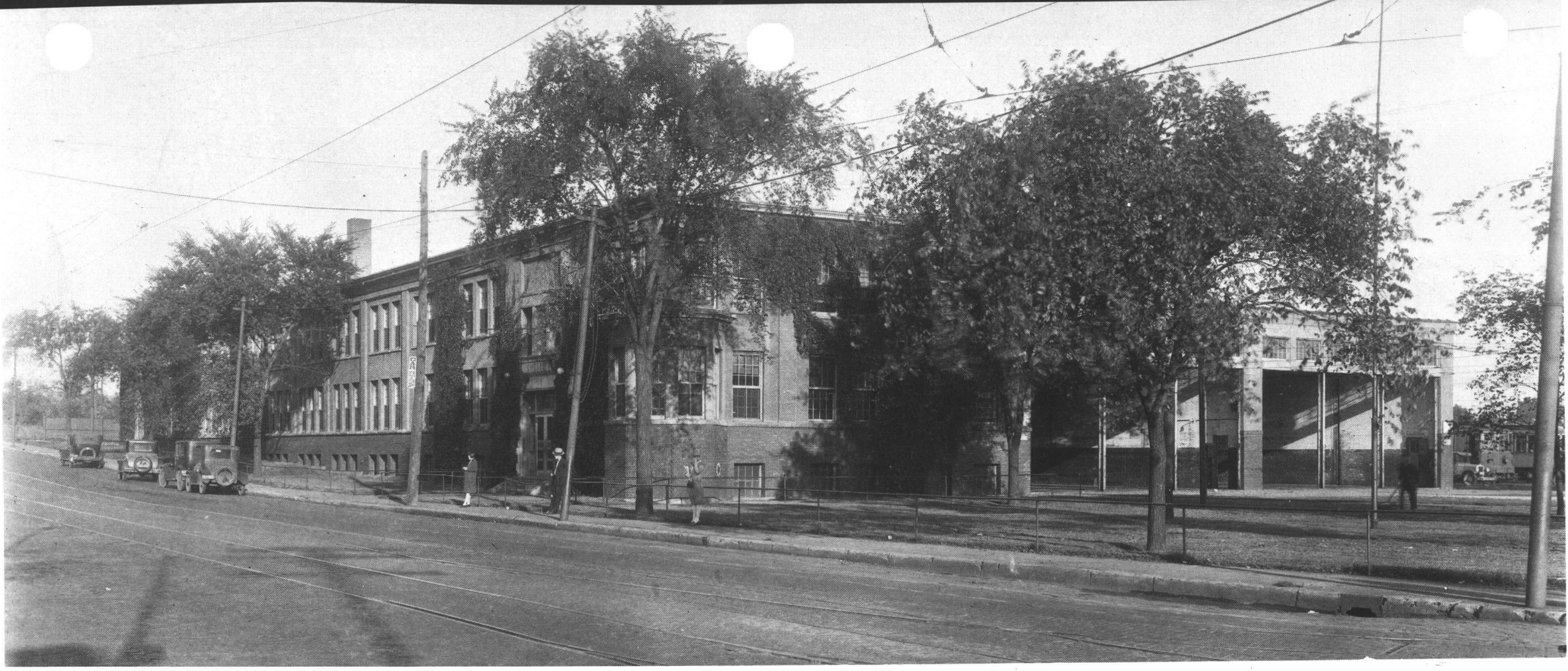
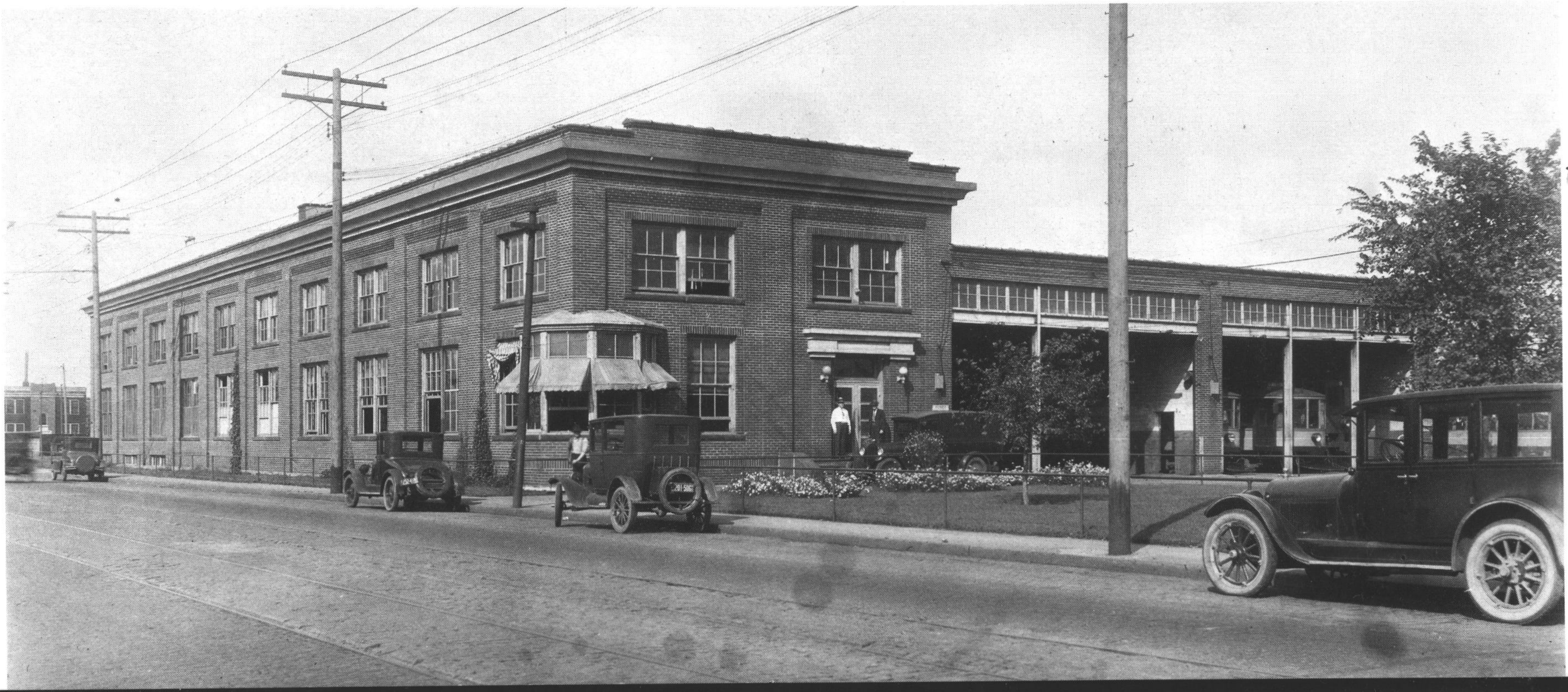


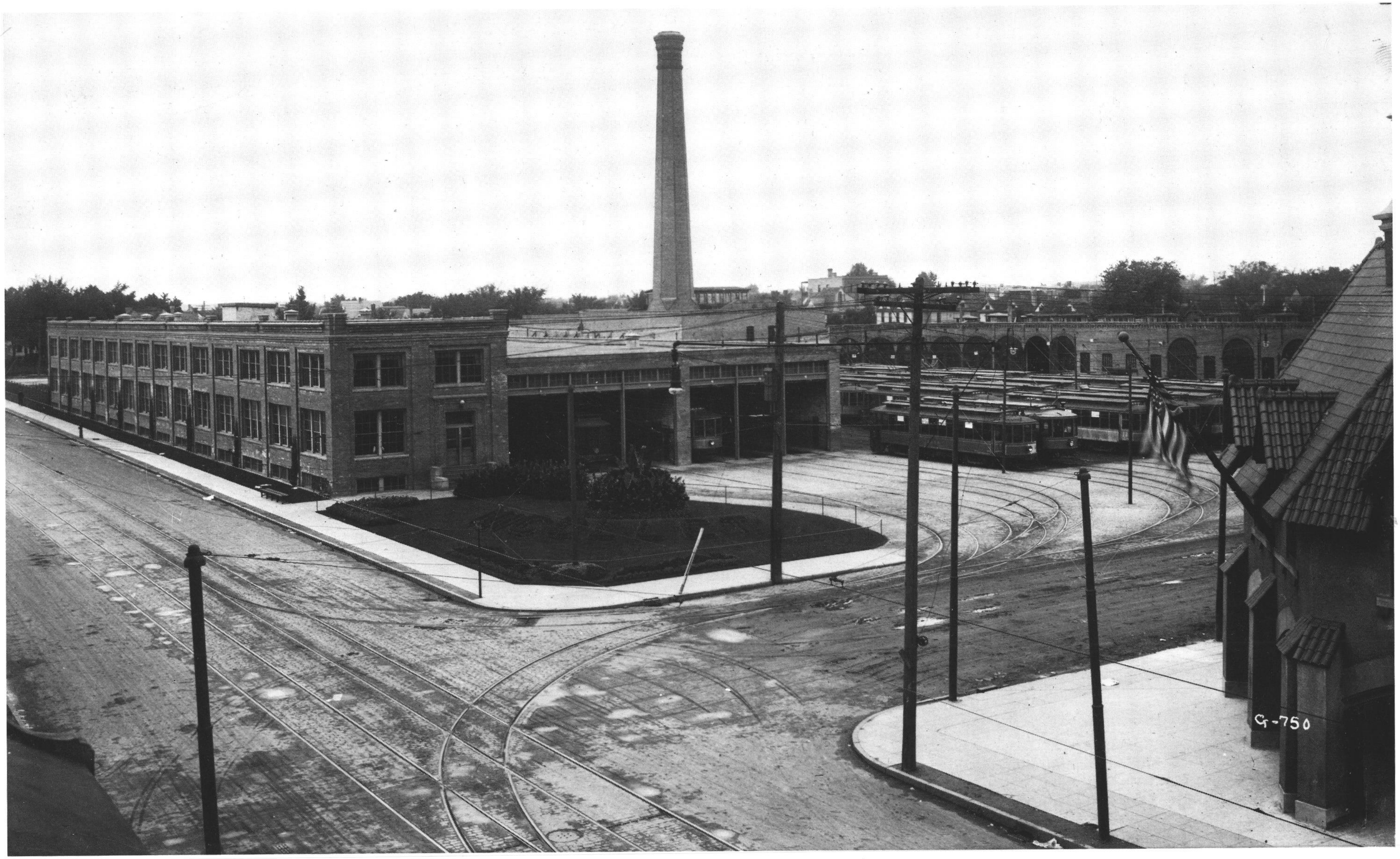
Two views of East Side Station, Minneapolis, after rebuilding; the top photograph was taken from University Ave. N.E. while the bottom was taken from 4th St. N.E. (TCRT)







AVERY®
PV119ED



This Page

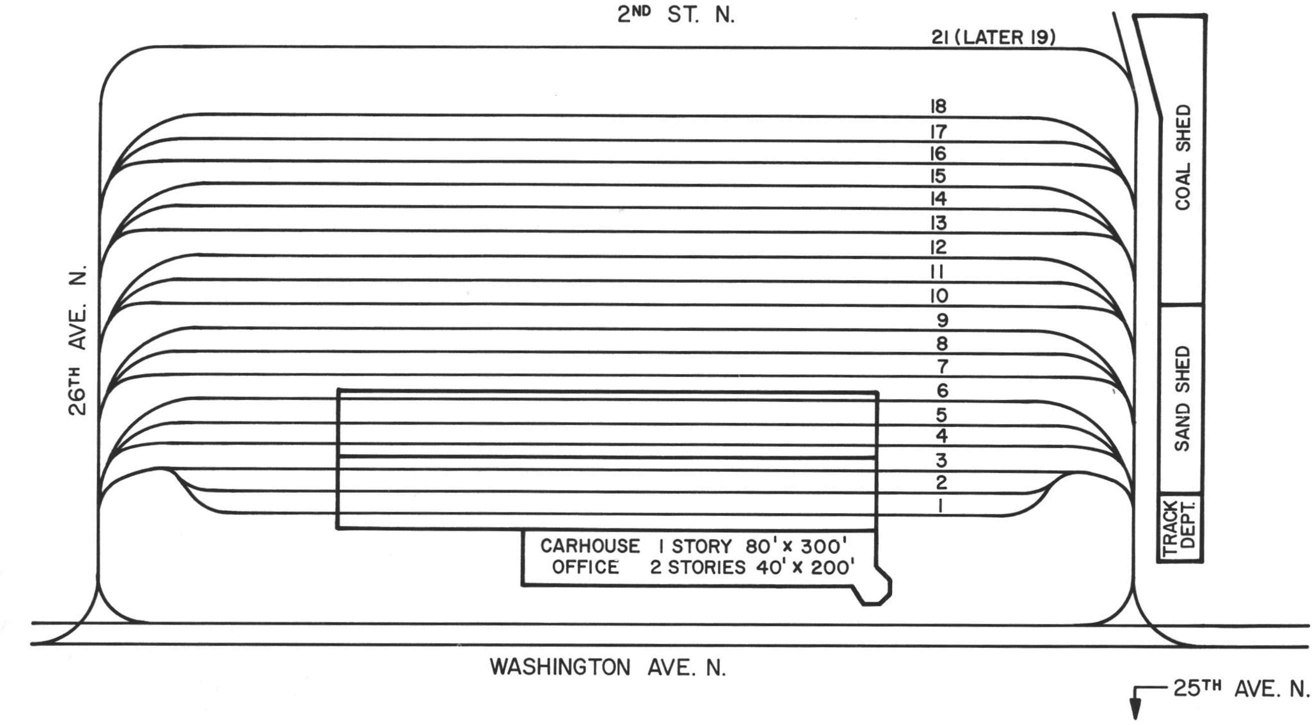
Nicollet Station, Minneapolis, as rebuilt during 1911-1912. The roundhouse and powerhouse can be seen to the right center. Baggage car 34 is on track 2 in the carhouse. (Minnesota Historical Society collection)

Facing Page

Above: Lake Street Station, Minneapolis, about 1928.

Below: North Side Station, Minneapolis, about 1928. (Both photographs TCRT)

MINNEAPOLIS ST. RY. NORTH MINNEAPOLIS "NORTHSIDE" STATION


2ND ST. N.
21 (LATER 19)
18
17
16
15
14
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12
11
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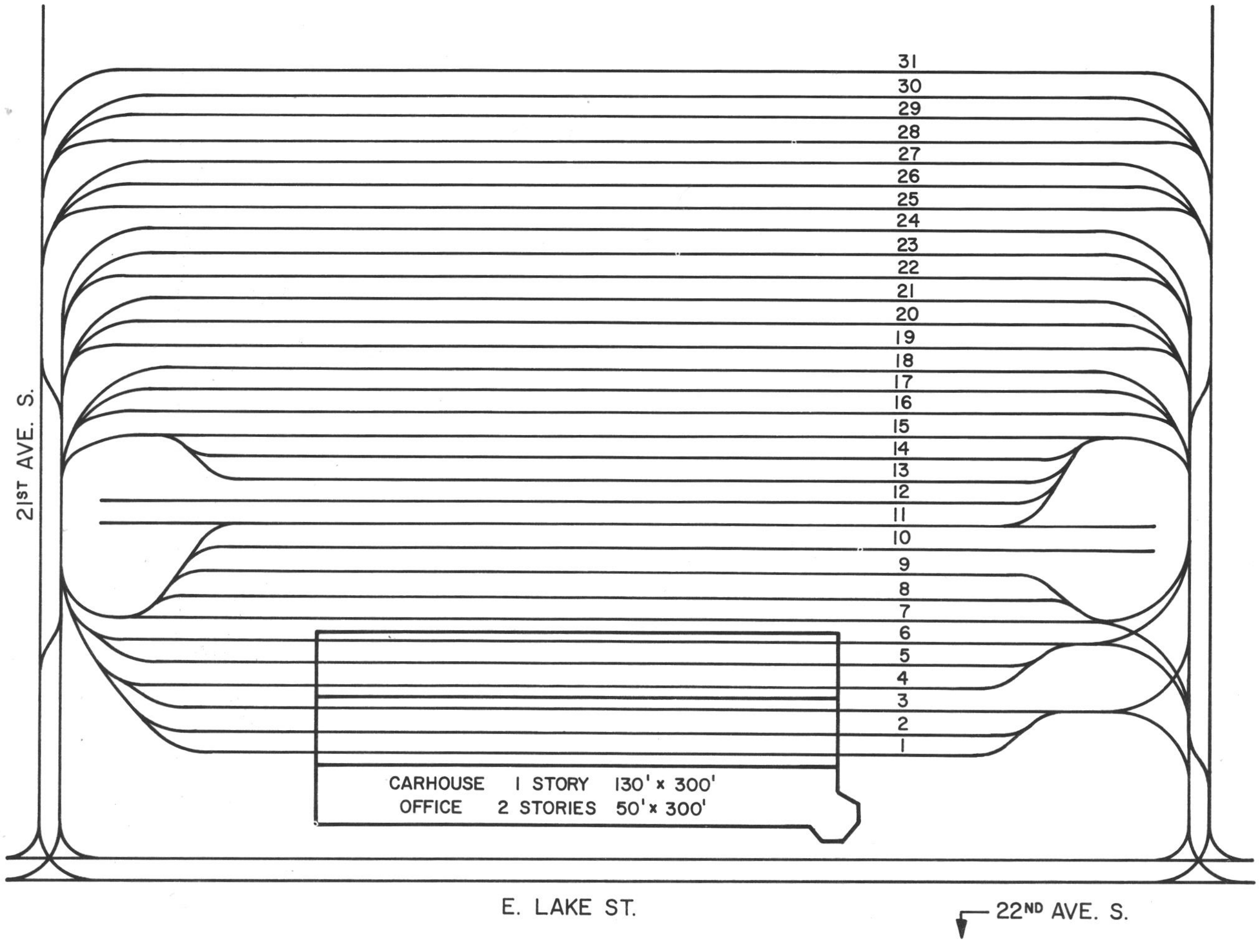
9
8
7
6
5
4
3
2
1
COAL SHED
SAND SHED
TRACK DEPT.
26TH AVE. N.
CARHOUSE 1 STORY 80' x 300'
OFFICE 2 STORIES 40' x 200'
WASHINGTON AVE. N.
25TH AVE. N.

MINNEAPOLIS ST. RY. LAKE ST. STATION 1916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10
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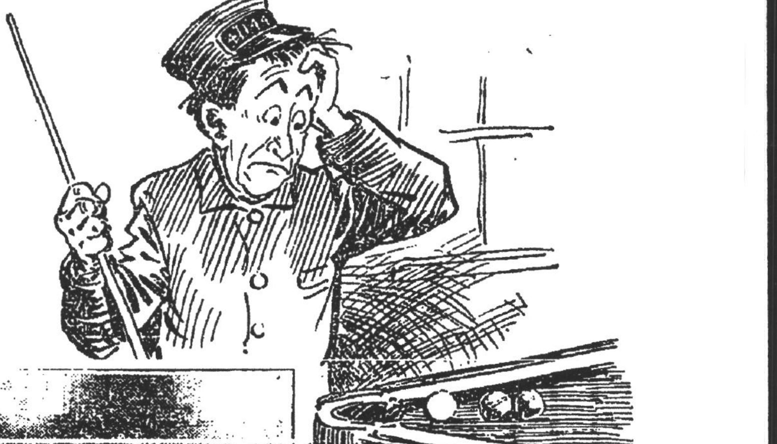
3
2
1
21ST AVE. S.
CARHOUSE 1 STORY 130' x 300'
OFFICE 2 STORIES 50' x 300'
E. LAKE ST.
22ND AVE. S.

Club Features in Trolley Company's New Barns on Nicollet Avenue Offer Pool Ro...
Minneapolis Morning Tribune (1909-1922); Dec 3, 1911;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 14

Club Features in Trolley Company's New Barns on Nicollet Avenue Offer Pool Room, Dormitory, Shower Baths and Library to Car Men

READING ROOM.



THE Minneapolis Street Railway company yesterday opened another model club for Minneapolis conductors and motormen in connection with its new car barns at Nicollet avenue and Thirty-first street.—This is the second club opened here by the company for its employes, the first having been placed at the disposal of the men Sept. 1 in the Lake street barns.

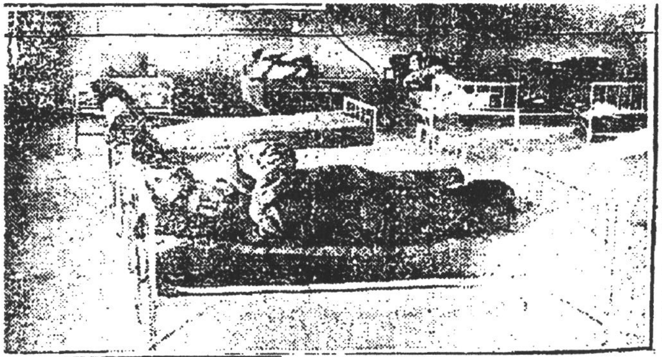
The new club rooms occupy the second floor above the offices. The rooms are large and light. Accommodations provided include reading rooms, pool rooms, a gymnasium, bed rooms and shower baths. These are open to all between 8 a. m. and 11:30 p. m.

The reading and lounging rooms are equipped with large, comfortable chairs and reading tables covered with the latest magazines. The public library has installed a branch, which is patronized freely by both single and married men. In the bed rooms are cots for the men wishing to rest between runs or for men who come in late at night and go out early in the morning.

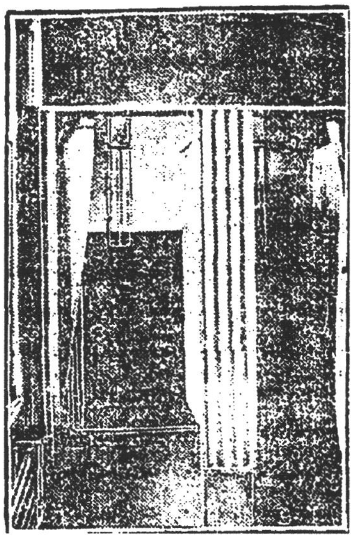
In order to make the pool games interesting a charge of 1 cent per cue is made, the money being used for the betterment of the club. Cigars, tobacco and soft drinks are sold at cost. A barber shop is being installed, where the men can get their work done at reduced rates.

Officials of the company say that the men have taken advantage of opportunities offered and seem to appreciate what is being done for them to such an extent that the company has decided to open similar rooms at the other stations as soon as the necessary arrangements can be made. They say, after only three months' trial of the plan in the Lake street barns, that the good results are noticable in the increased efficiency of the men, for where they would formerly spend both their time and money in environments possibly not fit they now have a place where they can enjoy themselves during their spare time at practically no cost to them.

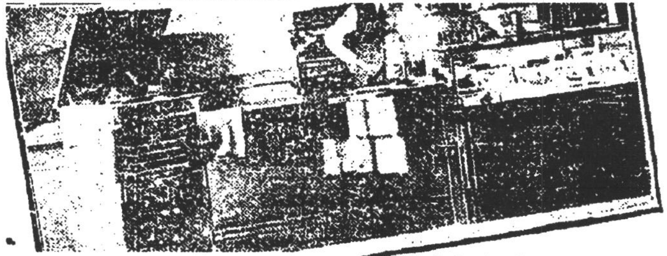
While these club rooms for employes are a new venture in Minneapolis the idea is not a new one, as it is now being generally used by large corporations throughout the country.



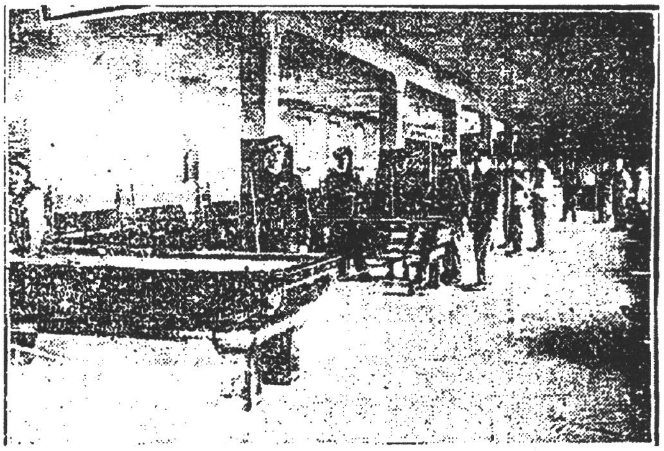
DORMITORY.



SHOWER BATH.



CIGAR STAND—"SMOKES" SOLD AT COST.



POOL AND BILLIARD ROOM.

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TWIN CITY WELFARE NOTES

The relations of the management of the Twin City Rapid Transit Company with its men have always been satisfactory and the company does not hesitate to make any reasonable expenditure to promote their welfare. Fortunately for both, Minneapolis has a Young Men's Christian Association which is alive to its opportunities for usefulness. Particular attention has been given to the electric railway men by one of the secretaries, F. M. Anderson, who has the rare gift of developing the initiative of the men so that they are able to plan for themselves. The secretary gives talks in the carhouses at 10 o'clock in the morning with such good results that the motormen and conductors much prefer listening to his addresses to loafing between runs. Evening entertainments are also handled by the secretary with excellent support. On account of the past successful work of Mr. Anderson the company arranged on Aug. 1 for him to devote all of his time to its men.

Twin City Welfare Work—Lake Street Carhouse

Twin City Welfare Work—Nicolet Avenue Carhouse

The actual work of planning entertainments is done by committees appointed by the division superintendent. Parties are held at more or less regular intervals, three or four to a station during the winter. The usual entertainment is a card party followed by a dance and refreshments. The cost of music, refreshments, prizes and incidentals is borne by the company entirely. The company is considering the purchase of a moving-picture equipment next winter to enable the men to vary the nature of their entertainments.

All carhouses are provided with club quarters comprising reading and rest rooms. The men may also spend the night in the carhouses, as cots, blankets and towels are furnished for that purpose without charge. Pianos, shower baths, punching bags and other sources of recreation and comfort form parts of all equipment. Pool tables have recently been added and pool tournaments in and between stations were conducted last winter with great success. Individual medals and a large loving cup were presented by the company, the latter as a station trophy. The athletic apparatus has been so popular that the installation of small gymnasiums is being considered for next winter. Barber shops are provided at all stations. The company supplies the equipment but does not pay the barbers, who work independently but under an agreement as to prices to be charged the men. The convenient location and reasonable prices of these shops are effective in encouraging the men to maintain a neat appearance.

The company has not found it satisfactory to conduct elaborate restaurant service, but its light lunch counters, where cigars, soft drinks and fruits are sold at cost, are very popular.

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MINNEAPOLIS STREET RAILWAY

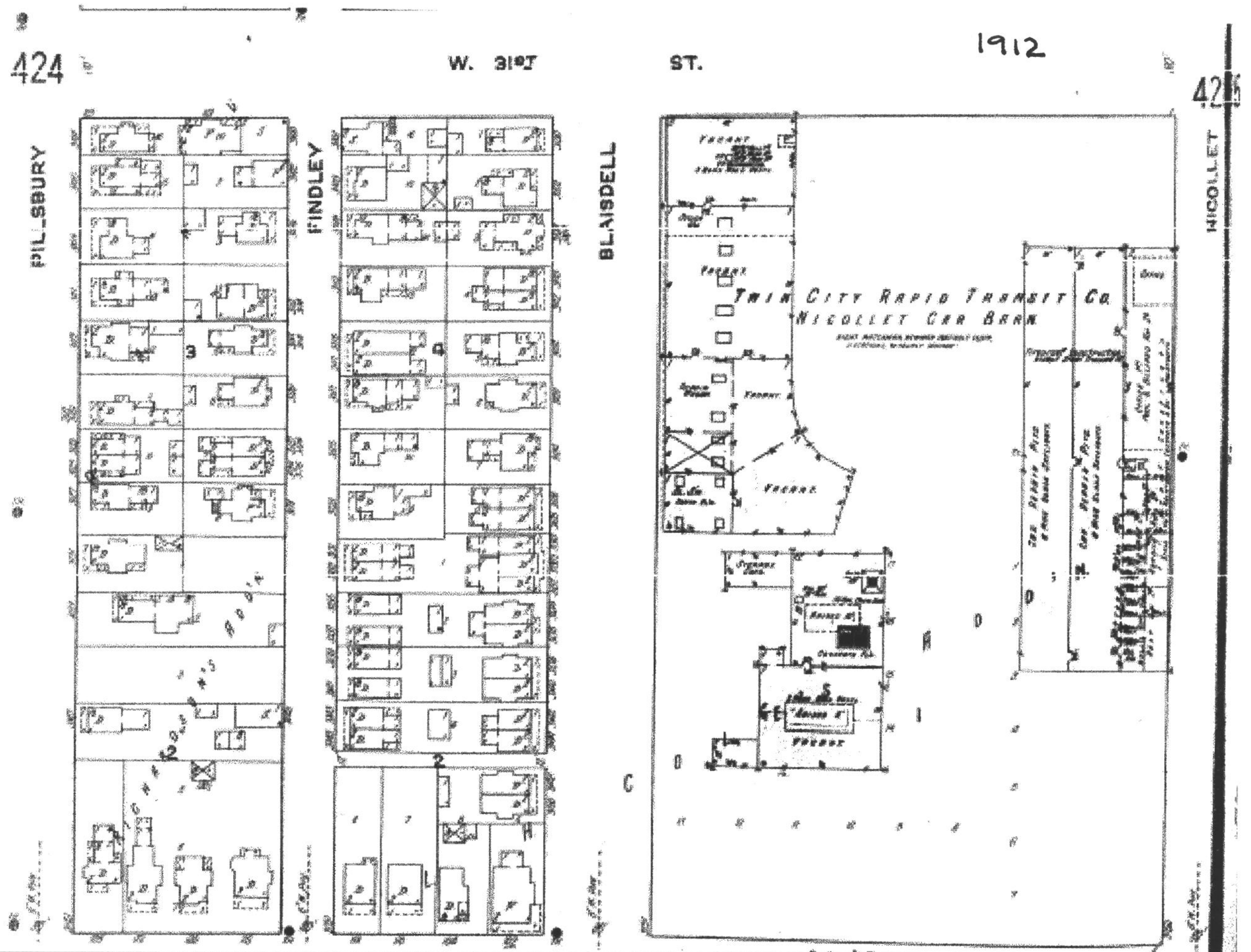
Nicollet Station
1912-1953

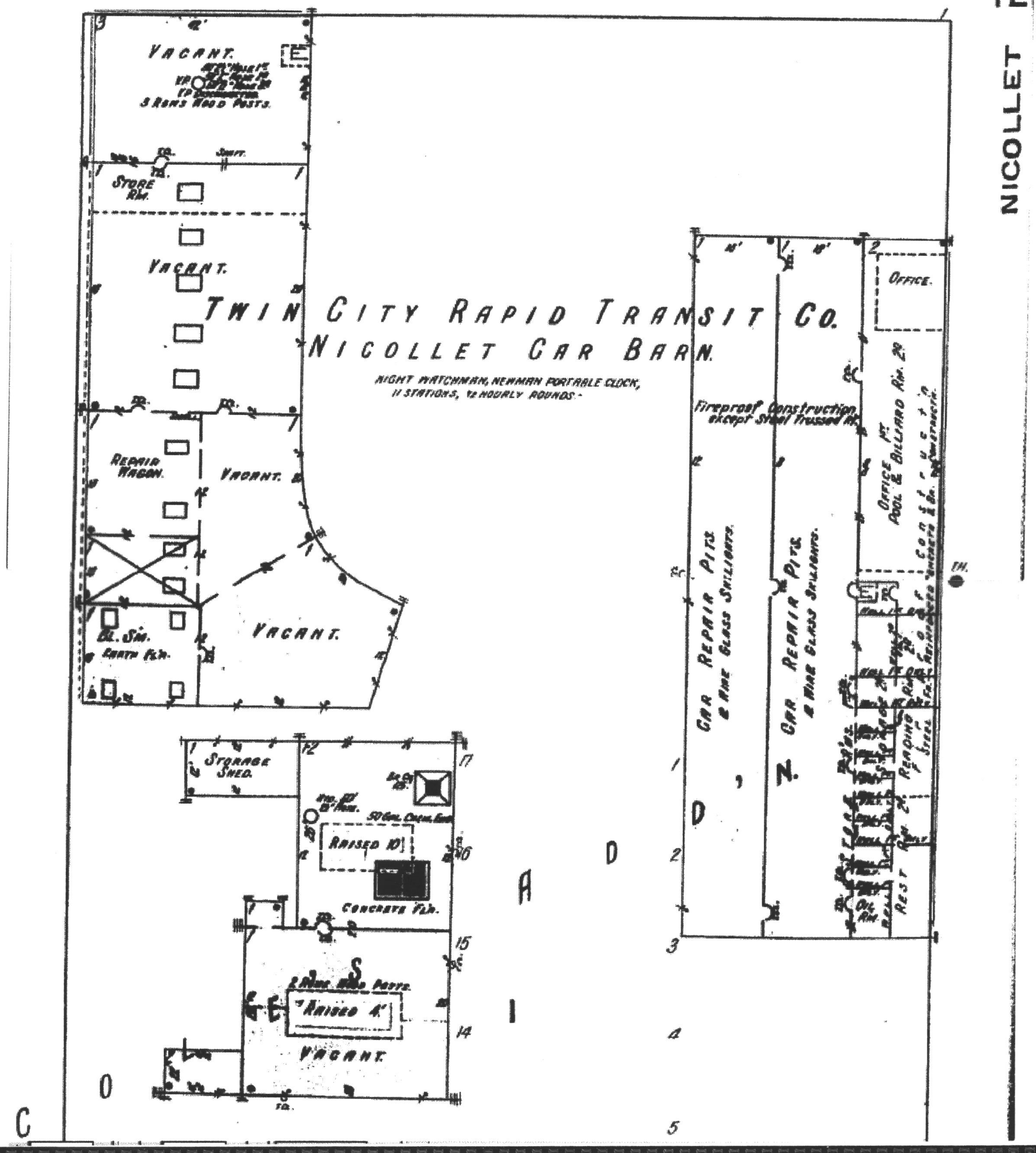
Work began April 5, 1911, on demolishing the 31st St. Car Station building and Erecting Shop to make space available for a completely new and redesigned operating station. The new building and car storage yard were opened during November 1912 as the Nicollet Station. The original engine room and boiler room building remained, the boilers supplying steam heat for all the buildings on the premises. (The Private Car was stored on track 15 inside the former engine room.) This development work also required removal of that part of the original roundhouse building containing tracks 1 thru 4. During 1915 tracks 15 thru 17 were extended and an additional track built to the blacksmith shop.

A new heating plant in the car station building was completed during November 1916. The old engine room/boiler room building was demolished during December 1916.

More of the old roundhouse building was razed during 1916-1918 to build tracks 15 thru 19, 23 and 24. The former machine shop-office-storehouse buildings were used by the Track Department for maintaining the Minneapolis system. The old storehouse building was converted into a garage n December 1917. Track 15 and 16 were extended and connected during 1923. The remainder of the old roundhouse building was razed in 1939 so that tracks 17 thru 19 could be extended and connected.

As of March 1944 part of the carhouse building (tracks 4 thru 6?) was already in use as a bus garage. (Capacity 26 buses; assigned 24.) As of May 1947 the lightweight cars were assigned to track 4 and carwashing machinery was located on track 6. Tracks 18 and 19 were again extended, sometime between 1949 and 1951. On July 10, 1953, the last streetcar operations ended. The entire facility was converted to a bus garage.




NICOLLET
TWIN CITY RAPID TRANSIT CO.
NICOLLET CAR BARN.
NIGHT WATCHMAN, NEWMAN PORTABLE CLOCK, 11 STATIONS, ½ HOURLY ROUNDS.
VACANT.
3 ROWS WOOD POSTS.
STORE RM.
VACANT.
REPAIR WAGON.
VACANT.
BL. SM.
EARTH FL'R.
VACANT.
Fireproof Construction except Steel Trussed Rf.
OFFICE.
OFFICE 1st.
POOL & BILLIARD RM. 2d
Fireproof Construction
CAR REPAIR PITS
& WIRE GLASS SKYLIGHTS.
CAR REPAIR PITS
& WIRE GLASS SKYLIGHTS.
READING RM.
REST RM.
OIL RM.
STORAGE SHED.
RAISED 10'
50 GAL. CHEM. ENG.
CONCRETE FL'R.
2 ROWS WOOD POSTS.
"RAISED 4'"
VACANT.
D
A
S
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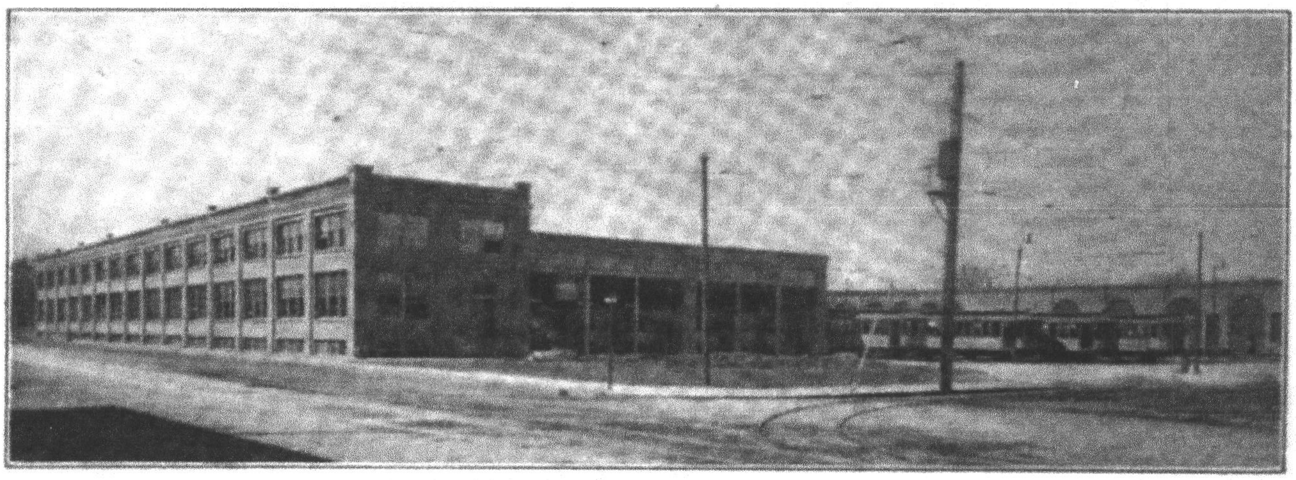
FH.

The New Nicollet Avenue Carhouse of the Twin City Rapid Transit Company

A Description of a Modern Fireproof Carhouse and Storage Yard with Commodious Trainmen's Club Rooms—The Building Is Equipped with Novel Carhouse Entrance Doors and Trolley Construction

The Twin City Rapid Transit Company, of Minneapolis, Minn., has recently put its new Nicollet Avenue carhouse and storage yard in service. The new station and yards occupy the site of the old general repair shop on Nicollet Avenue between Thirty-first and Thirty-second Streets. Before work on the new station could be started it was necessary to remove a large portion of the old shop buildings and tracks. Ingress and egress to the new station are from the north and south, and the entrance to the old shop and yards was from the east, or Nicollet Avenue, thus the new and old layouts intersected at right angles.

The new station and yards will provide storage space for 200 cars, and all cars operating on the Washburn Park and Columbia Heights, Fourth Avenue South and Sixth Avenue North and the Monroe and Bryant lines will be stored at this point. The carhouse occupies the northeast corner of the property and consists of a three-track bay storage shed and a two-story and basement section. This two-story section is used for trainmen's club rooms, transfer office, headquarters for the underground cable department and for the storage of running repair parts. The storage yard occupies the remainder of the vacated property and consists of six house tracks which have 90 ft. of outside storage space at the Thirty-first Street end of the property and 190 ft. at the Thirty-second Street end, two 190-ft. stub tracks leading up to the south end of the carhouse, one of which is depressed and enters the basement of the building, eight tracks 598 ft. long extending the full length of the property, four stub storage tracks at the south of the old boiler room 200 ft. long, and a depressed cinder-loading track at the north of the boiler room.



Minneapolis Carhouse—General View of Building and Storage Yard

TRACK LAYOUT AND OVERHEAD

As shown on the general plan, the track layout was designed so that cars may leave the storage yard from either the Thirty-first or the Thirty-second Street end headed in any decided direction. The ladder construction, which provides leads to three storage tracks spaced at 12-ft. centers through one branch-off from the main ladder track, was designed with a view to reduce the number of turnouts in the main ladder and at the same time to obtain a maximum storage space on the yard tracks. The track approaches to both the yard and the carhouse have been paved with brick between the station building line and street curb line. The yard tracks have been brought to a uniform elevation, and the entire yard has been covered with a gravel surface even with the tops of the rails.

Span-wire construction carried from tubular steel poles supports the overhead trolley lines. The overhead was constructed so as to leave the storage yards as free from poles as possible. The yard is illuminated at night by arc lamps mounted on brackets which have been clamped to the tops of the trolley poles.

The carhouse was built 90 ft. 6 in. back from the building line on Thirty-first Street, and the space directly in front of the two-story section of the building will be parked. Wide concrete walks have been constructed on the three sides of the property and leading up to the entrances of the two-story section of the building.

CARHOUSE CONSTRUCTION DETAILS

The building has been made fireproof throughout, being constructed on concrete foundations with reinforced concrete columns, floor systems, floors and roof slabs. The roof over the carhouse bays is supported on structural steel columns and trusses. The curtain walls are of brick and hollow tile. The general appearance of the building is pleasing, it being constructed of light-brown pressed brick laid in mortar colored to match. The trim around the windows, the belt courses and coping are of white unglazed terra cotta.

The car shed is divided into two bays 35 ft. 5 in. wide by 303 ft. long, and each contains three tracks which have concrete inspection pits extending their full length, as shown in the building plan. The car pit floors are convex, with 5-in. x 3-in. open drains on both sides. Provision has been made for heating the pits and carhouse by securely fastening steam-pipe coils to racks on the pit walls 1 ft. below the top of the rail. The open-pit drains are provided with outlets to sewers which pass transversely across the two bays. The pits are well lighted by lamps set in recesses in the pit walls. The floor between pits is a 3½-in. concrete slab, also convex in cross-section, and small open drains just outside the rails of each track, with grated outlets to the pit drainage system, are provided.

Seven-inch T-rail was employed as the running rail for

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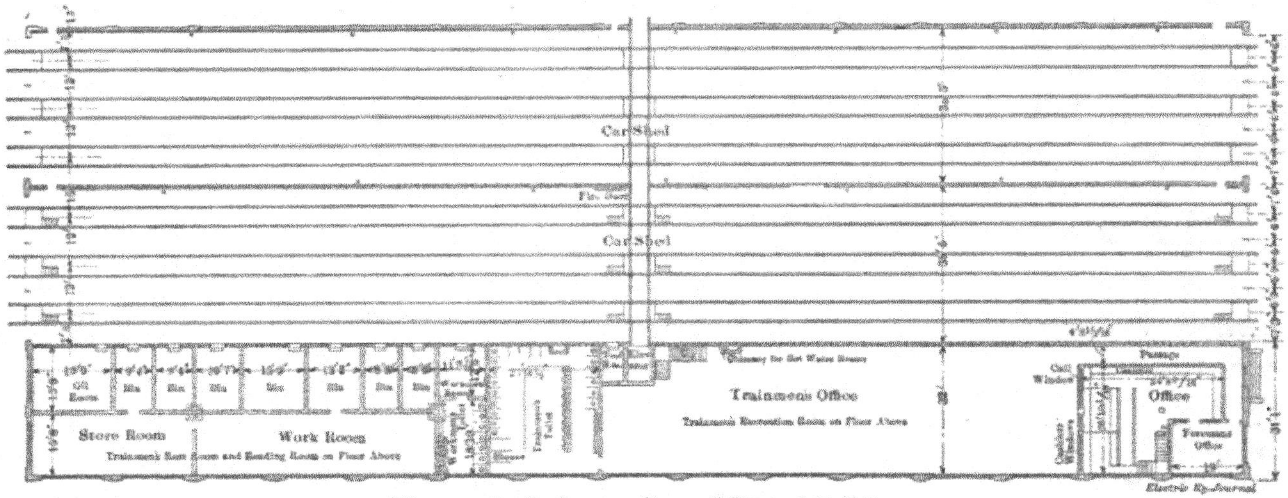
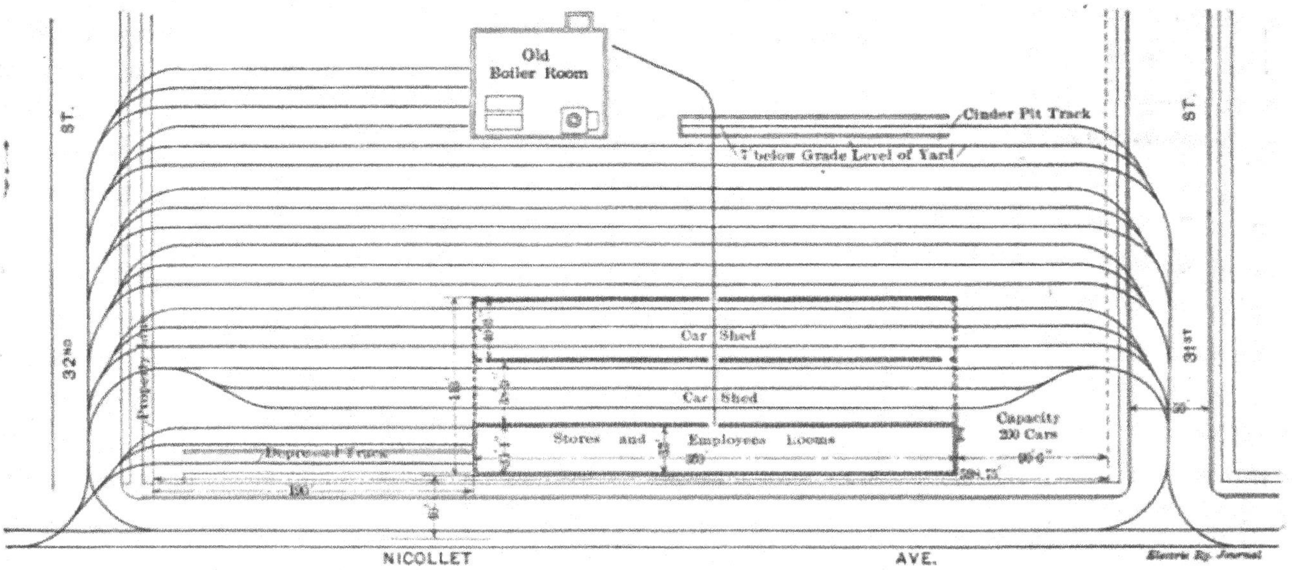
the pits, and this is anchored to the pit walls by two ¾-in. hook bolts which pass through holes in the base of the rail where a nut and rail clip have been applied. The rail anchor bolts are staggered at 4-ft. intervals. The inside bolt is 24 in. long, and the outside bolt is 36 in. long with a 4-in. hook on each.

The space between the track pits has been filled, but the arched concrete floor over this space was reinforced with ¾-in. x 7-ft. 3½-in. tie rods, which are spaced at 4 ft. intervals, and tie the pit walls of the adjoining pits together so that any tendency in the wall to overturn is checked and settlement in the filling will not crack the floor. Tie rods, ¾ in. x 5 ft. 8 in., spaced at 4-ft. intervals, tie the pit walls to the building-wall foundations.


Car Shed
Car Shed
Trainmen's Office
Trainmen's Recreation Room on Floor Above
Oil Room
Bin
Store Room
Work Room
Trainmen's Bath Room and Reading Room on Floor Above
Call Window
Passage
Office
Foreman's Office
Electric Ry. Journal

Minneapolis Carhouse—General Plan of Building

The roof over the car sheds is a 3½-in.-concrete slab reinforced with American Steel & Wire Company's triangular mesh. It was designed to support a live load of 20 lb. per square foot of roof. The roof slab is carried on I-beam purlins which rest on the structural-steel roof trusses. The roof is covered with a five-ply tar-and-gravel roof coating. Roof drainage is provided by sloping the roof slightly from the center line of each bay and the down spouts lead down along the inside of the building walls into the pit drainage system.


Old Boiler Room
Cinder Pit Track
7' below Grade Level of Yard
32ND ST.
31ST ST.
Property Line
Car Shed
Car Shed
Stores and Employees Rooms
Capacity 200 Cars
Depressed Track
NICOLLET AVE.
Electric Ry. Journal

Minneapolis Carhouse—General Arrangement of Storage Yard and Carhouse

In order to reduce fire hazards the building wall between the storage yard and car shed was constructed without windows, and only four door openings were provided. The partition walls between the car-shed bays and the two-story section were provided with as few openings as practicable, and all have been protected with underwriters' specification fire doors.

Since practically no daylight is furnished through the walls of the car-shed bays, it was necessary to supply twenty-four 6-ft. x 12-ft. skylights, spaced at 20-ft. intervals transversely with the car shed, and at 40-ft. intervals longitudinally. Transom sashes were provided over each of the car entrances. The skylights were designed especially for this carhouse and consist of an angle and T-bar frame on which rest sections of ribbed-wire glass, 6 ft. x 18 in. x ½ in. in size. The condensation drains are connected to the down spouts from the roof.

CARHOUSE DOOR DESIGN

Probably the most novel feature in the entire carhouse construction will be found in the design of the car entrance doors and the trolley construction inside the carhouse. The door openings vary in width from 11 ft. 1½ in. to 12 ft. 8½ in., dependent on car clearances, and all are 17 ft. 8 in. in height. The construction details are shown in the illustrations. The novel features include a 16-gage continuous sheet-steel surface on the weather side of the door and a 4-lb. painted duck surface on the inside. The sheet steel is stiffened with 1½-in. x 1½-in. x ⅛-in. angles riveted horizontally to the sheet steel and spaced on 20-in. centers. An air space of 1½ in. is provided between the steel and

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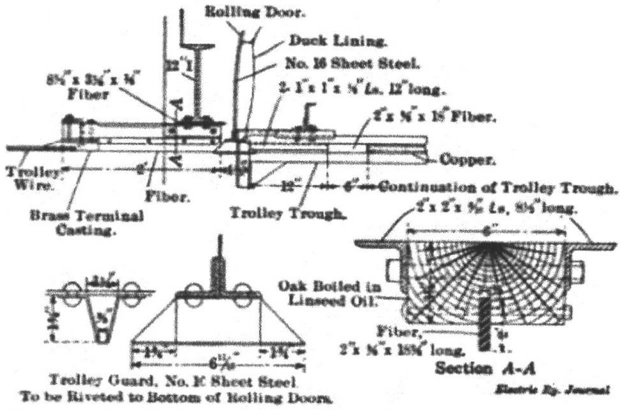
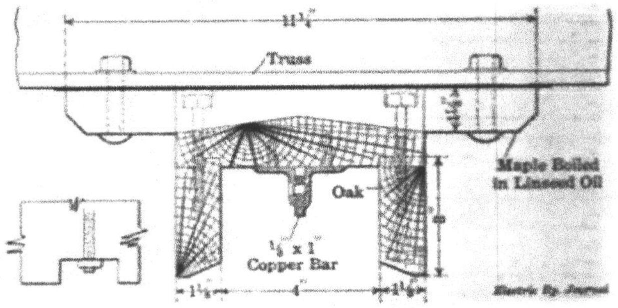
duck surfaces by riveting a ¾-in. x ¾-in. x ⅛-in. angle back to back with the stiffening angles and applying the duck to the small angle with stove bolts and washers.

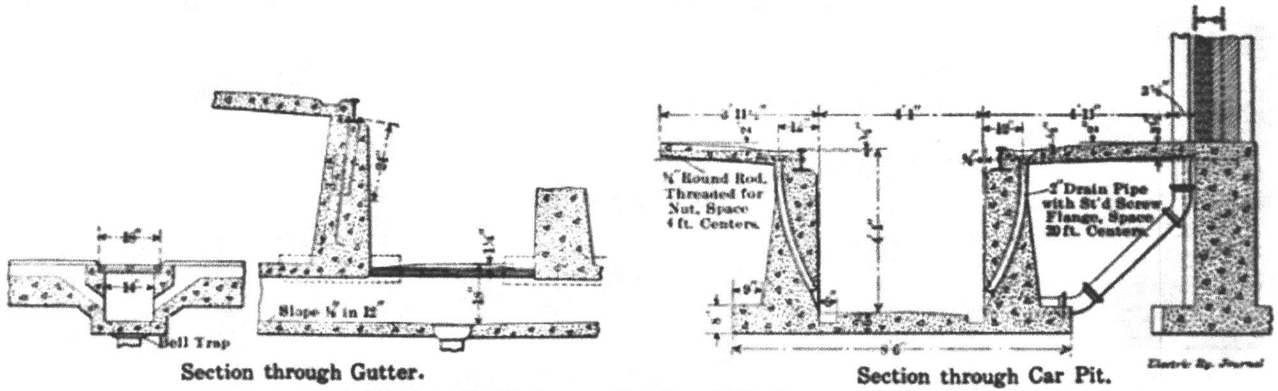
In the design of the doors special care was taken that they should have a tight fit in the guides. This fact and the preservation of an air space between the steel and the canvas greatly improve the weather-resisting qualities of the doors. The door guides are formed by bolting two ¼-in. plates and a 7/16-in. separator to the walls and I-beam columns which form the entrances. The space between the sheet-steel weather surface which projects into the guide slots and the sides of the slot was weatherproofed by the application of two strips of ⅛-in. leather on the inside face of the metal, crimped to fill the guide slot.


Rolling Door.
Duck Lining.
No. 16 Sheet Steel.
Fiber
2" x 2" x ⅜" Ls. 12" long.
Fiber.
Copper.
Trolley Wire.
Fiber.
Brass Terminal Casting.
Trolley Trough.
Continuation of Trolley Trough.
Oak Boiled in Linseed Oil.
Fiber,
Section A-A
Trolley Guard, No. 16 Sheet Steel.
To be Riveted to Bottom of Rolling Doors.
Electric Ry. Journal

Minneapolis Carhouse—Details of Overhead Construction at Rolling Doors


Truss
Maple Boiled in Linseed Oil
Oak
½" x 1"
Copper Bar
Electric Ry. Journal

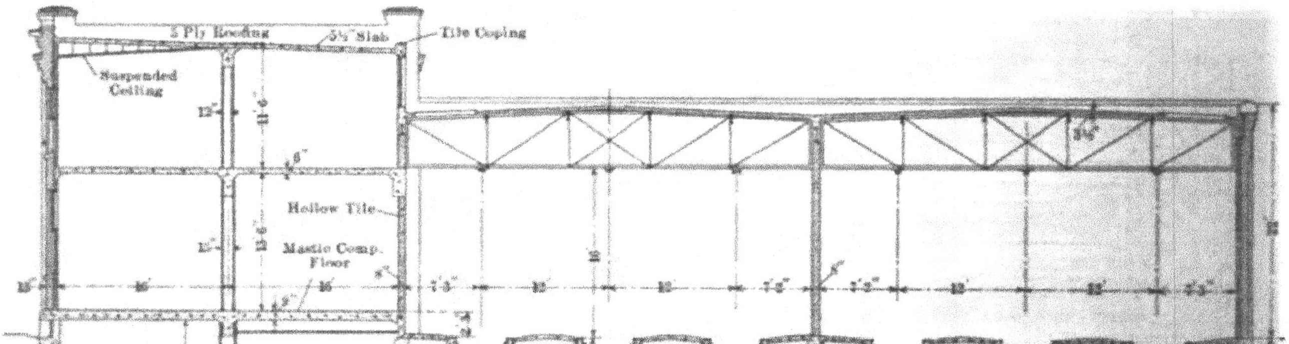
Minneapolis Carhouse—Details of Trolley Trough and Supports


Bell Trap
Slope ¼" in 12"
⅝" Round Rod, Threaded for Nut, Space 4 ft. Centers.
2" Drain Pipe with St'd Screw Flange, Space 20 ft. Centers.
Electric Ry. Journal

Section through Gutter.

Section through Car Pit.

Minneapolis Carhouse—Details of Pit Construction


5 Ply Roofing
5½" Slab
Tile Coping
Suspended Ceiling
Hollow Tile
Mastic Comp. Floor
Air Duct
Sewer Drain
6" Sewer
Sewer Drain
Electric Ry. Journal

Minneapolis Carhouse—Transverse Cross-Section of Building

The doors are opened and closed by a 2-hp General Electric motor which drives a line shaft. Two 10-in. sheave wheels are keyed to the shaft and operate the door by two cables passing over them. The motor is started from the floor level by means of a small cable, and it is provided with an electric disk brake which operates automatically when the door is open to the full height.

Two 5/16-in. continuous cables running a set of sheave wheels centered so as to conform to the curvature of the sheet steel raise and lower the doors. It requires thirty-five seconds to open the door its full height and fifteen seconds to close it. The engineers who designed the doors claim that they are not only weatherproof but that they are quick-acting. The effort required to open and close them has been reduced to a minimum so that the doors can be kept closed most of the time and thus maintain an even temperature.

CARHOUSE TROLLEY CONSTRUCTION

An especially designed dead-ending device and trolley guard, for closing the gap through which the car-entrance door is raised, were employed and are shown in the illustrations. The trolley guard is made of 16-gage sheet steel and is applied to the bottom flange of the door. It was bent in the form of a "V," and the operation of the doors may be adjusted so closely that when they are open the guard fits tight over the ends of the fiber strips which form the trolley-wheel runway on each side of the door opening.

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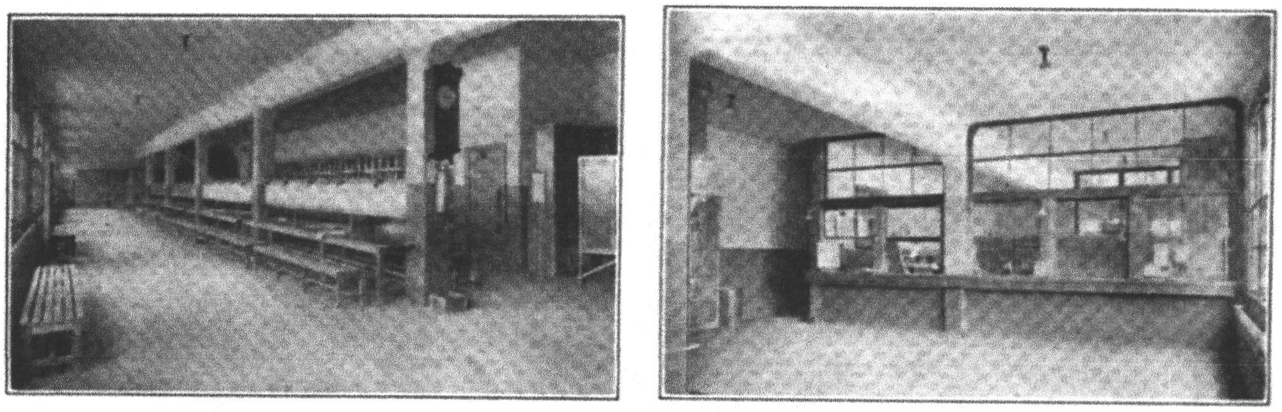
The trolley trough design is shown in the illustrations and consists of the usual shaped oak trolley trough with 2¾-in. by 4-in. inside dimensions. It is hung on the bottom cord of the roof trusses and on special hangers embedded in the concrete roof, spaced at 10-ft. intervals. The novel feature of the trolley trough construction is that the trolley wire has been replaced by a ⅛-in. x 1-in. copper bar which is applied to the trough by two 1-in. x 1-in. x ⅛-in. angles to which it has been riveted. The trough was assembled complete in 60-ft. lengths at the Twin City Company's shops before it was raised to the hangers in the new car shed.

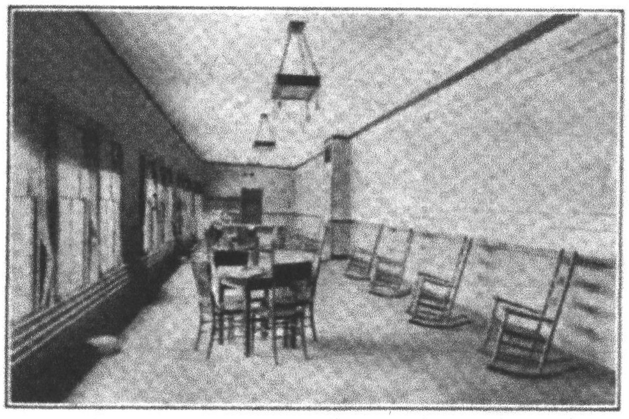


Minneapolis Carhouse—Trainmen's Office and Locker Room and Division Cashier's Office on Ground Floor

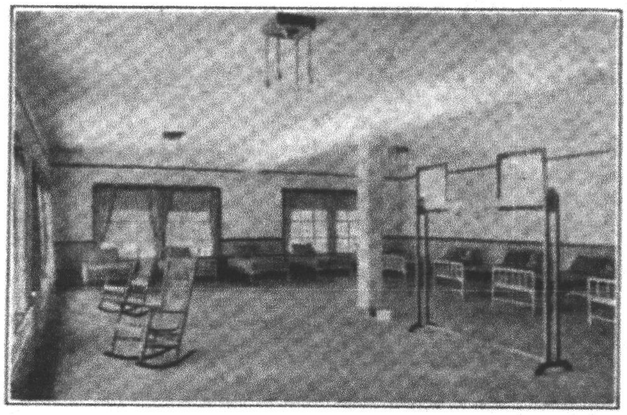
TWO-STORY CONSTRUCTION DETAILS

The two-story and basement section of the carhouse is 34 ft. wide over all and 303 ft. long. It was built to provide space for the storage of light car-repair parts, car fuel and oil on part of the first and second floors, quarters for the underground cable maintenance department in the basement and spacious club rooms for the trainmen on the first and second floors. This section of the building was constructed on concrete foundations with structural-steel columns in the hollow-tile partition wall between it and the car sheds to support the car-shed roof trusses. A 13-in. brick wall supports the reinforced concrete floors and roof on the three exposed sides of the building. Reinforced concrete columns, 20 in., 15 in. and 12 in. respectively, support the two floor slabs and roof along the longitudinal center line of this section of the building.

The floor slab between the basement and first floor is 8 in. thick, reinforced with ½-in. rods spaced at 4-in. centers, and was designed to carry a load of 125 lb. per square foot. The floor between the first and second stories is 6 in. thick, reinforced with ½-in. rods on 24-in. centers and triangular mesh wire fabric, and was designed to carry 50 lb. per square foot. The roof slab is 5½ in. thick, reinforced with wire mesh. The floors in the first and second stories are constructed with a composition mastic wearing surface which makes them much warmer and more resilient than a plain concrete surface.



Minneapolis Carhouse—Reading Room



Minneapolis Carhouse—Trainmen's Rest Room

FLOOR PLANS

The basement of the two-story section of the carhouse has been made the headquarters for the underground department. Storage space has been provided for cables, conduit, etc., and a depressed track runs from the storage yard at the south end of the carhouse property into the basement. This track permits tools and cable to be handled readily to and from cars and greatly reduces the labor cost of handling this class of material.

The first floor is divided into a carhouse foreman's office, division cashier's office, trainmen's room and toilet, storerooms and workroom for carhouse supplies and workmen. The trainmen's office rooms have been plastered and finished in varnished yellow pine. The walls and ceiling have been tinted and stenciled in lead and oil, and tungsten ceiling fixtures in burnished brass finish the artificial illumination. Natural lighting is furnished through an almost continuous series of triple windows with slide sash in the east wall of the building.

TRAINMEN'S OFFICE AND CLUB ROOMS

The trainmen's office is furnished with Georgia pine benches, and a wide flat-top table extends practically the full length of the room between the center row of columns. A two-sided card or bulletin rack has been built in over the center of the table where instructions to trainmen may be posted, and desk lamps spaced at 4-ft. intervals have been attached to the tops of the card racks. The trainmen use this flat-top table for counting change and making out reports before handing them in to the cashier, who is stationed in an office at one end of the room. Individual trainmen's lockers occupy considerable wall space in the office room, and a completely equipped toilet, 27 ft. x 32 ft., is situated at the center of this section of the building.

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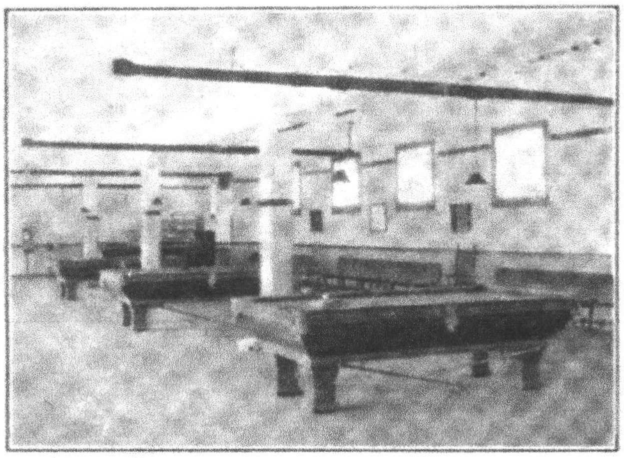
The second floor has been reserved for trainmen's club rooms and is finished in natural pine with tinted walls and ceiling. Neat and artistic draperies have been provided at all the windows. One end of this floor has been supplied with equipment with which the trainmen may take physical exercise. Three pool tables with a complete equipment have also been installed, and the men are charged a nominal amount per game. An illustration of this room is shown.



Minneapolis Carhouse—A Corner of the Employees' Recreation Room

Leading from the pool room to the sleeping room is a wide hall, shown in one of the illustrations, which has been furnished with tables, chairs, rockers and a complete line of engineering papers and fiction periodicals. The walls have been tinted and stenciled, and the light fixtures are of artistic design. The sleeping room, which is shown in the illustrations, is equipped with a number of cots, comfortable rockers and a clothes rack. Trainmen generally take advantage of the comforts which this room furnishes between shifts.

As the Twin City Rapid Transit Company has made it a rule to recruit its men from the rural districts rather than from the city, a large number of the unmarried trainmen have no attractive place in which to spend their time when off duty. The interest they are taking in the club rooms which the company has furnished at all division carhouses is an evidence of their appreciation of what has been done by the management. All club rooms of the company are under the supervision of P. J. Metzdorf, park manager, and the company pays all the running expenses.

OTHER DETAILS OF DESIGN

The two-story section of the building is served by a 5-ton, 30 ft. per minute elevator which is employed to transfer supplies between the second-floor storeroom and the car sheds and basement. Current for the station lighting is furnished at 220 volts d.c. by a motor-generator set which receives its energy from the trolley feeder. The low-pressure heating plant is situated in one of the old shop buildings about 150 ft. from the new carhouse, the feed and return piping being carried under the car storage yard and car sheds in a reinforced concrete tunnel. A depressed track, 7 ft. below the grade level of the yard, is installed adjacent to the boiler room to permit easy handling of ashes. Direct radiation for heating is used throughout, the car shed having pit coils as previously described and the two-story part of the building having pipe coils supported on wall racks below the windows.

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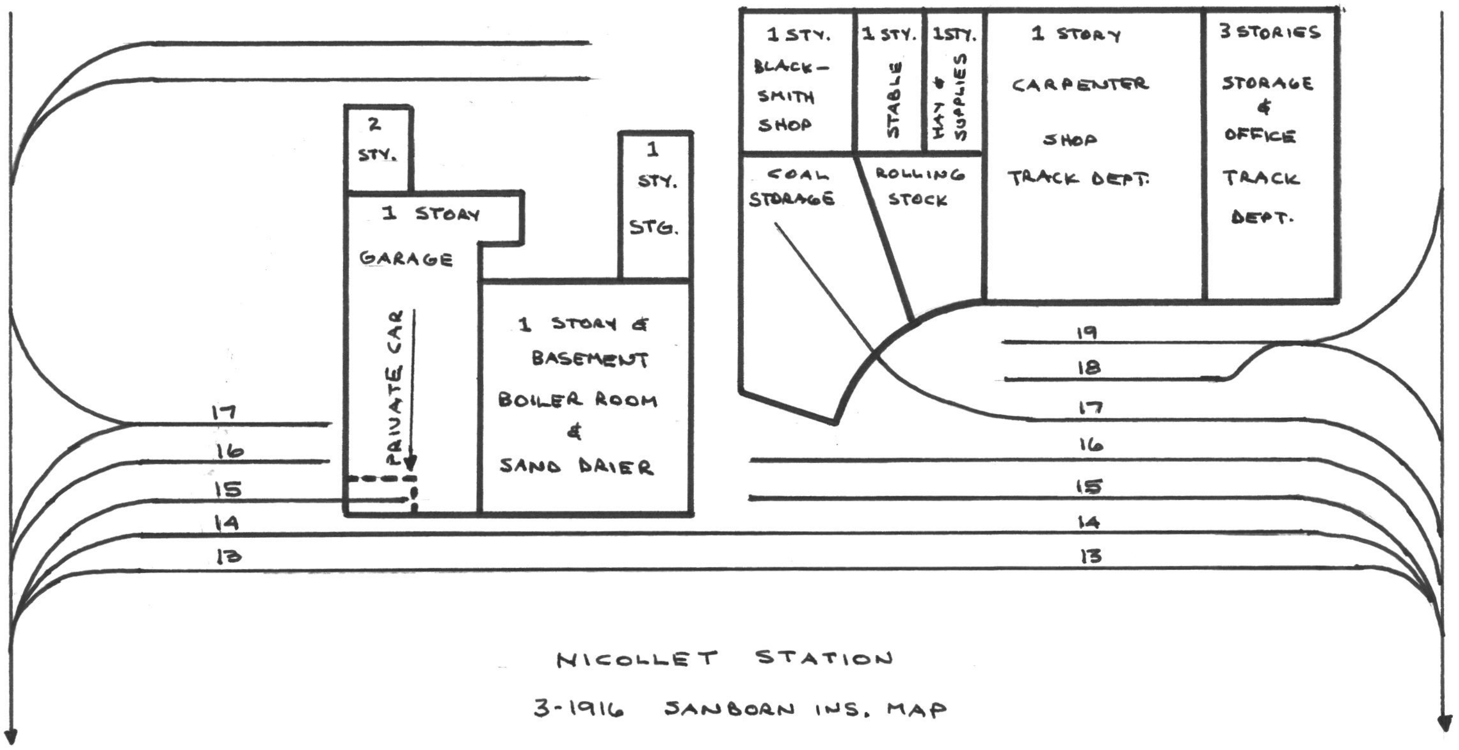
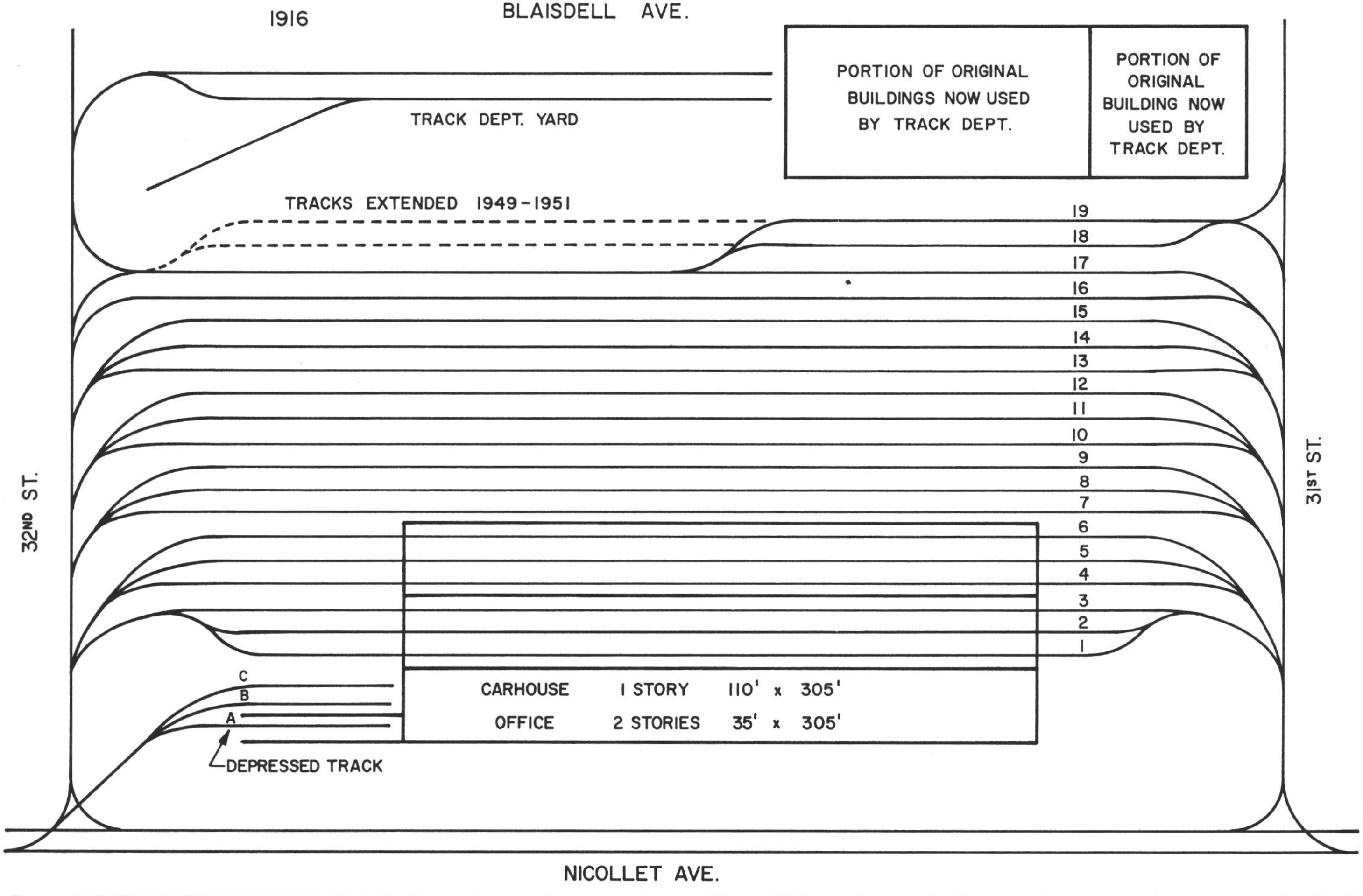

1 STY.
BLACK-SMITH SHOP
1 STY.
STABLE
1 STY.
HAY & SUPPLIES
1 STORY
CARPENTER SHOP
TRACK DEPT.
3 STORIES
STORAGE & OFFICE
TRACK DEPT.
2 STY.
1 STORY
GARAGE
1 STY.
STG.
COAL STORAGE
ROLLING STOCK
PRIVATE CAR
1 STORY & BASEMENT
BOILER ROOM & SAND DRIER
19
18
17
16
15
14
13

NICOLLET STATION

3-1916 SANBORN INS. MAP

MINNEAPOLIS ST. RY.
NICOLLET STATION
1916


BLAISDELL AVE.
PORTION OF ORIGINAL BUILDINGS NOW USED BY TRACK DEPT.
PORTION OF ORIGINAL BUILDING NOW USED BY TRACK DEPT.
TRACK DEPT. YARD
TRACKS EXTENDED 1949-1951
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
32ND ST.
31ST ST.
C
B
A
DEPRESSED TRACK
CARHOUSE 1 STORY 110' x 305'
OFFICE 2 STORIES 35' x 305'
NICOLLET AVE.

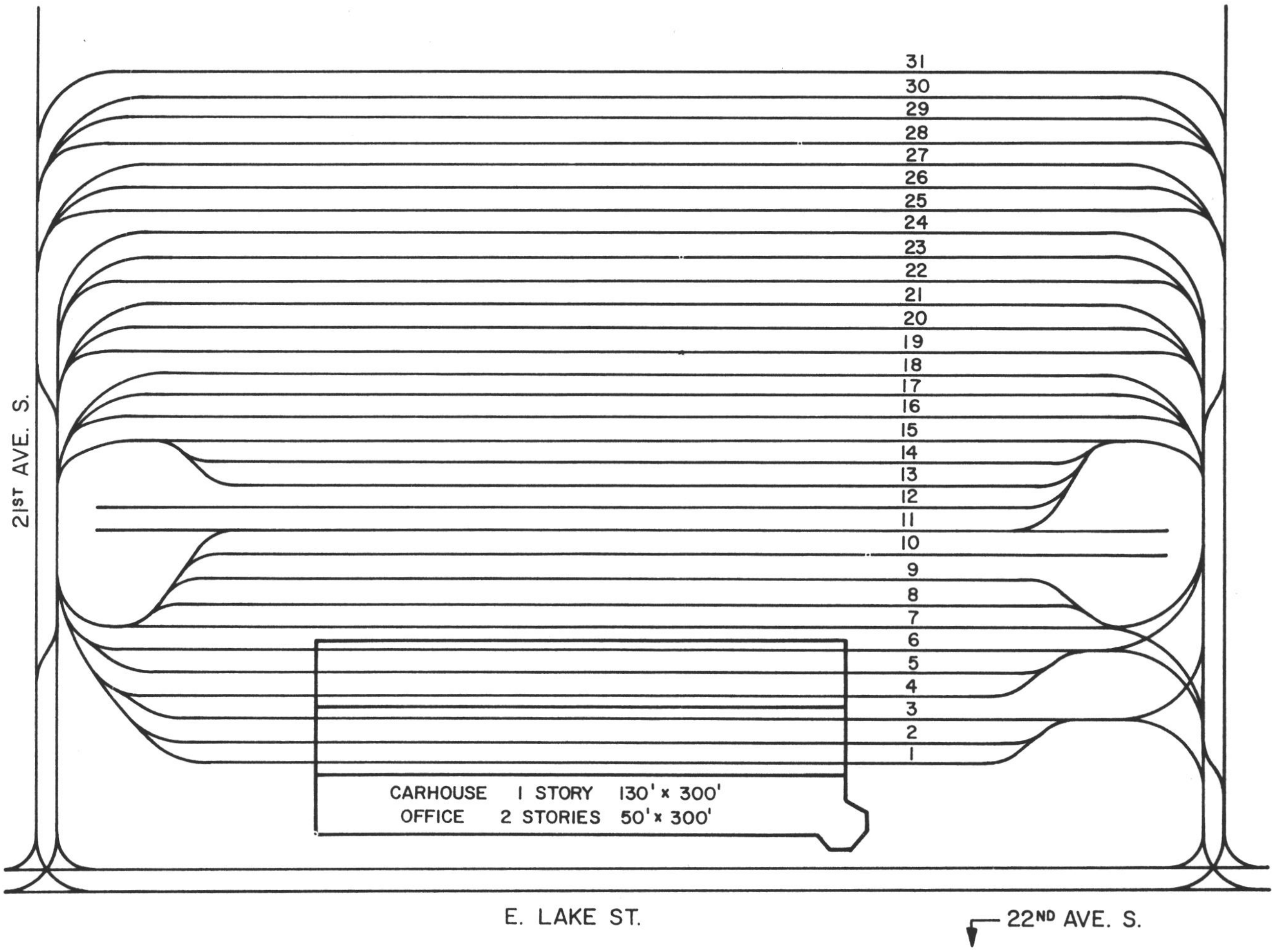
Lake Street Station
1910-1953

Built during 1910 on Lake St. E. between 21st Ave. S. and 22nd Ave. S. as a much larger and better located facility than the limited capacity and poorly located Bloomington Station. The station began operating November 5, 1910.

As of May 1947 car washing machinery was located on track 6. During 1950 that part of the carhouse containing tracks 4 thru 6 was converted for bus operation.

The last streetcar operation occurred November 28, 1953. The property was sold to the Mid-Continent Development & Construction Company. The building was demolished and real estate sold for construction of a shopping center.

MINNEAPOLIS ST. RY. LAKE ST. STATION 1916


31
30
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14
13
12
11
10
9
8
7
6
5
4
3
2
1
CARHOUSE 1 STORY 130' x 300'
OFFICE 2 STORIES 50' x 300'
21ST AVE. S.
E. LAKE ST.
22ND AVE. S.

ELECTRIC TRACTION WEEKLY

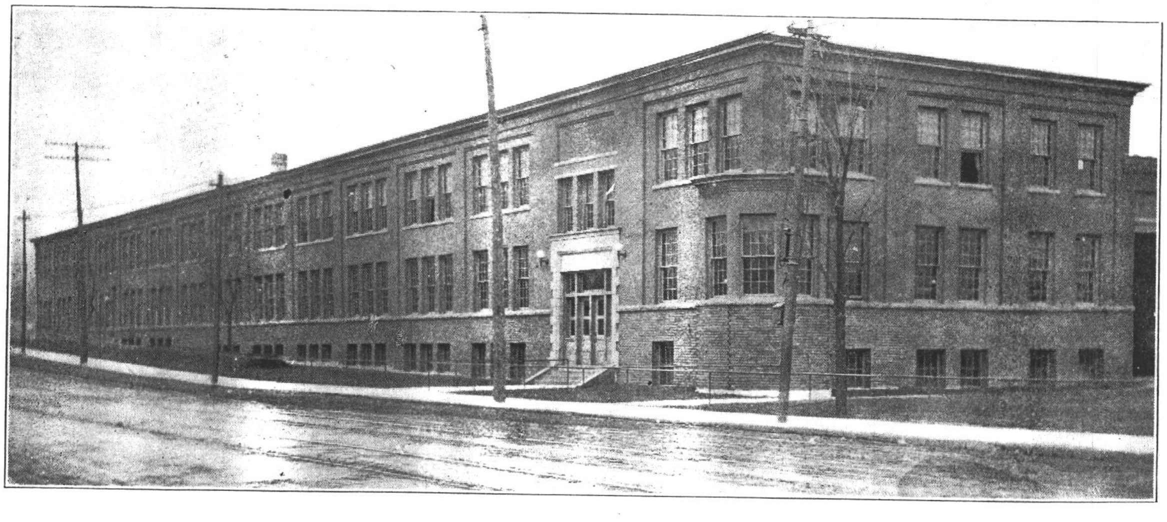
VOL. VII CHICAGO, ILL., DECEMBER 2, 1911 NO. 4

New Lake Street Station at Minneapolis

General Features, Including Open Storage with Inclosed Portions for Light Repairs and Inspection, Adopted as Standard

EDITORIAL CORRESPONDENCE

The Minneapolis Street Railway Company has just placed in operation at 21st avenue and Lake street, Minneapolis, a new terminal station. Aside from the fact that it is the first station of this design to be built by the company, the Lake street station, as it is known, is interesting for the reason that its general features have been adopted as standard, and future stations of the company will be of the same general design and construction.

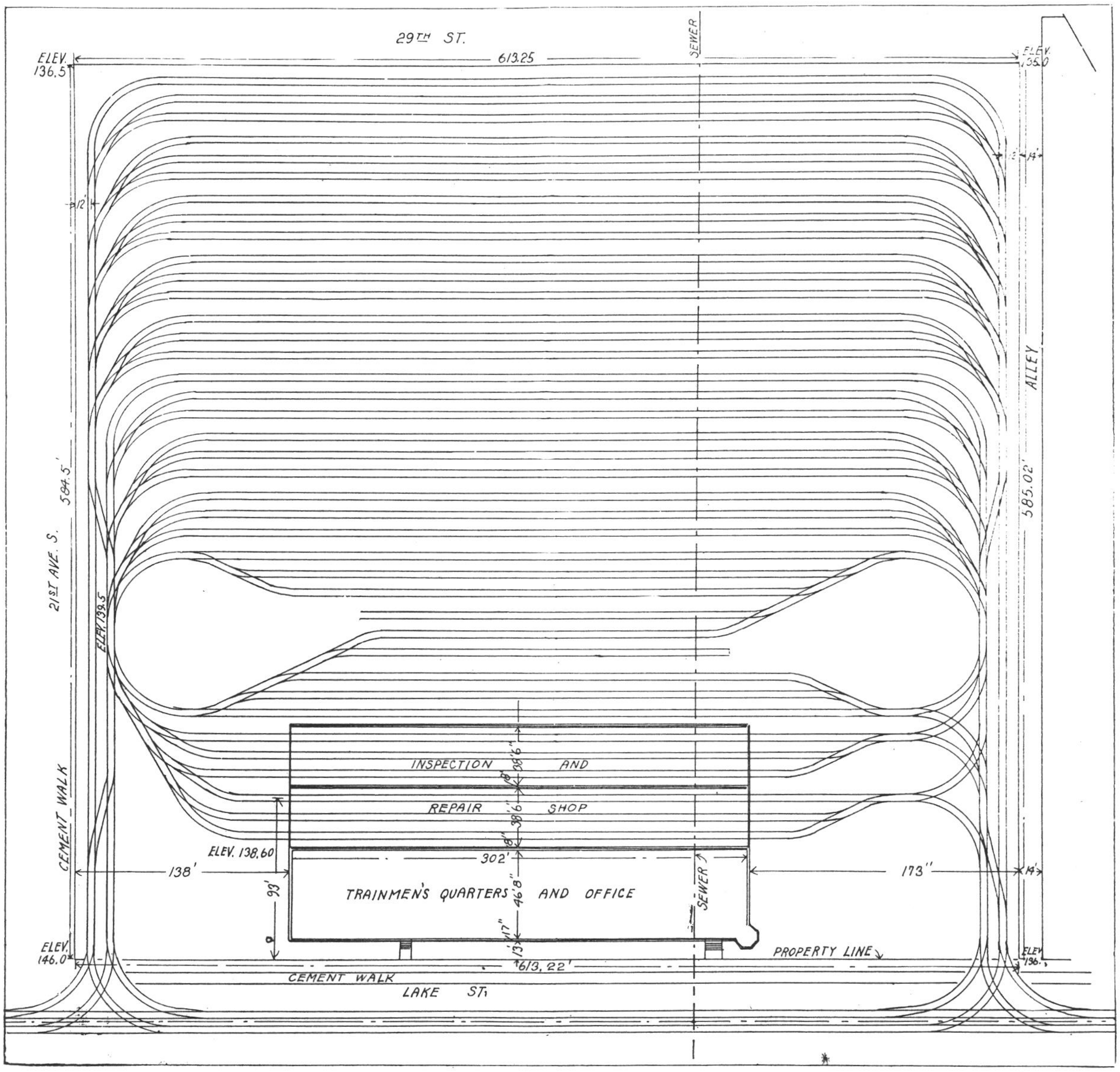


Front of Office of Car House Portion—Lake Street Station, Minneapolis

This company is one of the few in the country that has been able to make a decided success of open storage, and although very severe winters are encountered, bringing with them heavy falls of snow and other conditions supposed to make open storage practically impossible, very little trouble has ever been experienced, due in a great measure to the painstaking study that has been given to the subject and to the system that has been worked out to meet these conditions. This being the case, comparatively very little space is devoted to the car housing portions of the station, and as all but the very simplest of the car repairs are done at the main shops, the inclosed portions of the station are used principally for car inspection and cleaning. The total storage capacity at this location is 220 cars, the open storage yard, as at present arranged, accommodating 184 cars. This leaves a storage capacity of 36 cars for the closed portion of the station, about one-sixth of the total capacity. The only station of the company which is devoted entirely to closed storage is located on the east side of Minneapolis and has a capacity of 156 cars. At the remainder of the stations about 30 per cent of the cars are stored in inclosed car houses. These stations and their capacities are as follows: Nicollet station, Minneapolis, 162 cars; Snelling station, St. Paul, 420 cars; Seventh street station, St. Paul, 105 cars. Five cars are stored at Stillwater for use in that city.

The Lake street station is located on one of the main trunk lines between Minneapolis and St. Paul, 20 minutes by car from the center of Minneapolis and 15 minutes from the outskirts. From this station any of the other stations of the company can be reached within 35 minutes and the main shops in about 11 minutes.

The company at this point owns a piece of property 613 ft. long and 585 ft. wide, bounded on three sides by streets, and on the other side by an alley. From Lake street, to the rear of this property, on one side, the difference in elevation is 10 ft., while the other side is practically level, as is also the rear of the property. The difference in the elevation of the two sides of the front of the property on Lake street is about 10 ft.

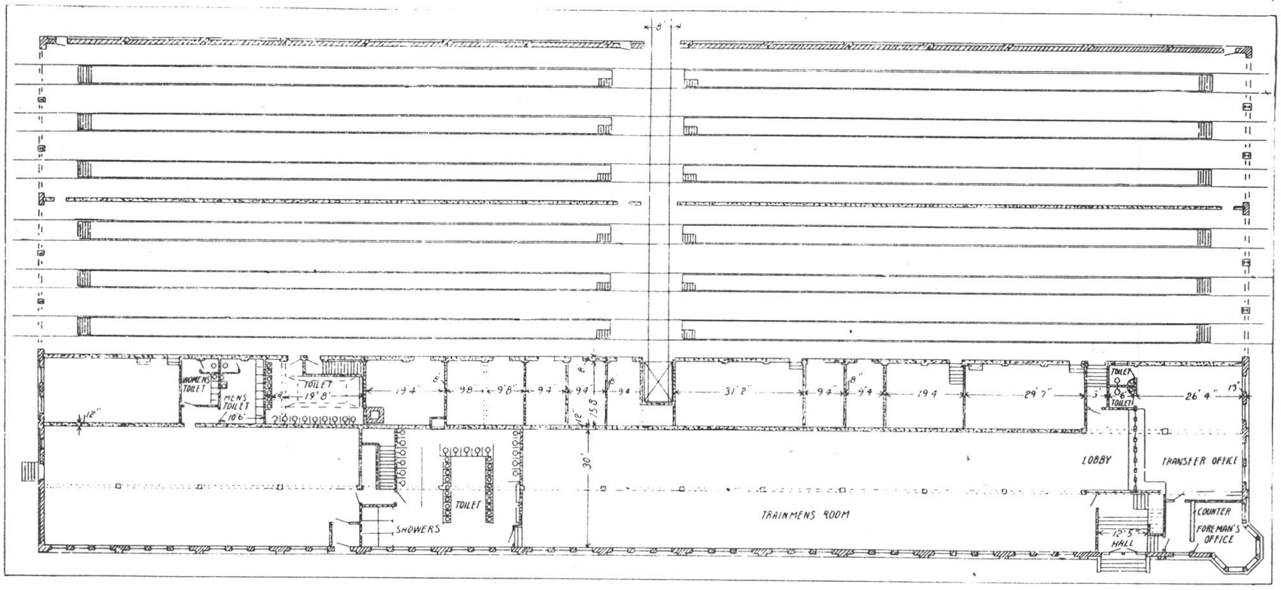

29TH ST.
613.25
SEWER
ELEV. 136.5
ELEV. 135.0
12
14
21ST AVE. S.
584.5'
ELEV. 139.5
ALLEY
585.02'
CEMENT WALK
INSPECTION AND
REPAIR SHOP
38'6"
18'
38'6"
18'
ELEV. 138.60
302'
138'
93'
173"
14
TRAINMEN'S QUARTERS AND OFFICE
46'8"
17"
13'
SEWER
PROPERTY LINE
ELEV. 146.0
ELEV. 136.
613.22'
CEMENT WALK
LAKE ST.

General Layout of New Lake Street Station at Minneapolis

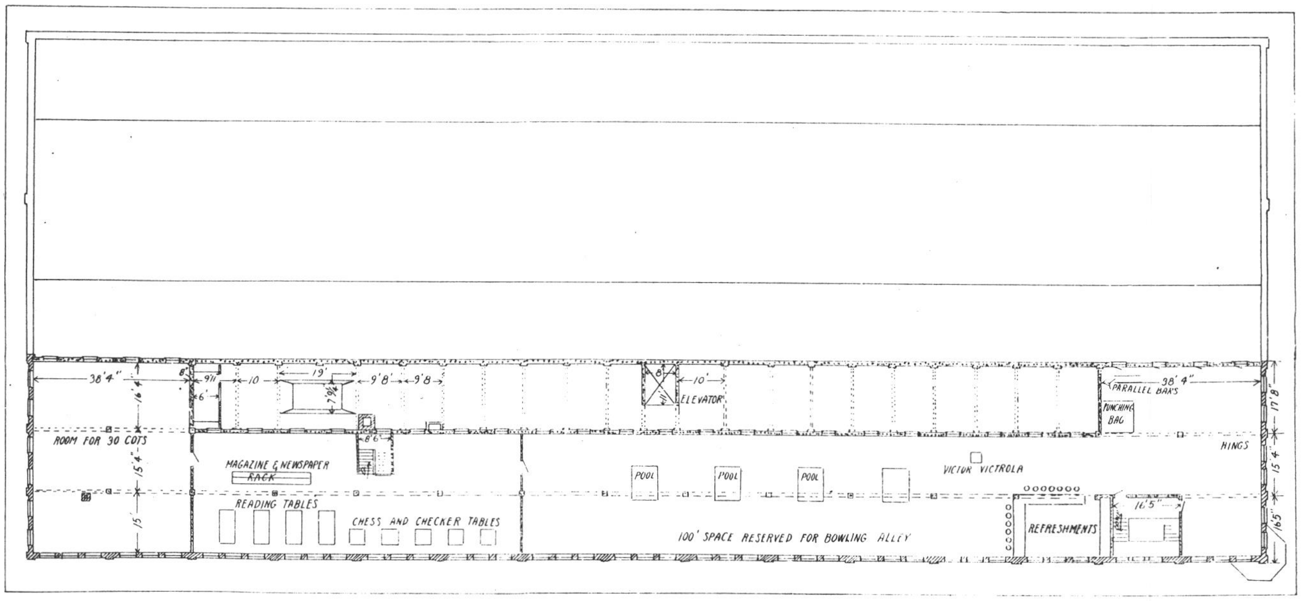
The car house portion of the station is 300 ft. long and 128 ft. wide, and is divided into three bays, two of which are repair and inspection bays, while the other is devoted to trainmen's quarters and offices. The outside walls, from the basement up, are of brick covered with a rough plaster coat of cement, and are built on concrete foundations. On account of the difference in grade between the two ends of the property, the first floor commences at a point some distance above the ground level and the walls up to this point are not plastered, nor is the wall of the last storage bay, adjoining the open storage portion of the station. These walls are carried well above the roof and are capped with tile coping. The window sills and other ornamentations on the walls are of cut stone.

The two storage bays are each 36 ft. 8 ins. wide and are divided from each other by an 8-in. concrete fire wall, the openings in which are protected with automatic tin clad fire doors. The roof over the storage bays is of concrete 3½ ins. in thickness, on top of which has been placed tar and gravel roofing. This roof, supported on structural steel roof trusses, is pitched so as to drain through the building, and is designed to carry a load of 70 lbs. to the sq. ft. The roof over the office bay is 5½ ins. in thickness and is supported on the building walls and on one row of

12-in. concrete columns placed on 19-ft. 11-in. centers, through the center of the bay. Light is admitted into each bay through two rows of flat skylights placed at frequent intervals. Each bay contains three tracks, under each of which are two pits extending almost the entire length of the building. The track next to the rear wall of the building is depressed to a point level with the basement floor, whence an industrial track runs transversely across the two bays under the floor, to a point in the office portion of the building, where it connects with an industrial elevator, in turn connecting the basement with the floor of the storage bay. The ashes from the car heating stoves are removed from the cars at this point and placed in an industrial car on the elevator, which is dropped to the track running underneath the floor, on which the ashes are removed to the outside of the building. Material may also be brought into the building by means of this track and the elevator.


WOMENS TOILET
MENS TOILET
TOILET
SHOWERS
TOILET
TRAINMENS ROOM
LOBBY
TRANSFER OFFICE
COUNTER
FOREMAN'S OFFICE
HALL

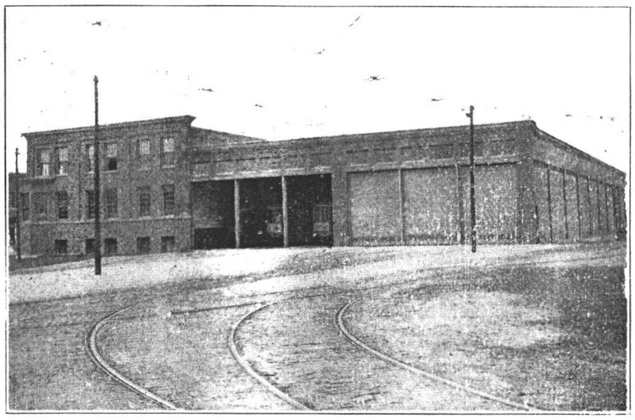
First Floor Plan of Car House Portion, Lake Street Station


ROOM FOR 30 COTS
MAGAZINE & NEWSPAPER RACK
READING TABLES
CHESS AND CHECKER TABLES
ELEVATOR
POOL
POOL
POOL
VICTOR VICTROLA
PARALLEL BARS
PUNCHING BAG
RINGS
REFRESHMENTS
100' SPACE RESERVED FOR BOWLING ALLEY

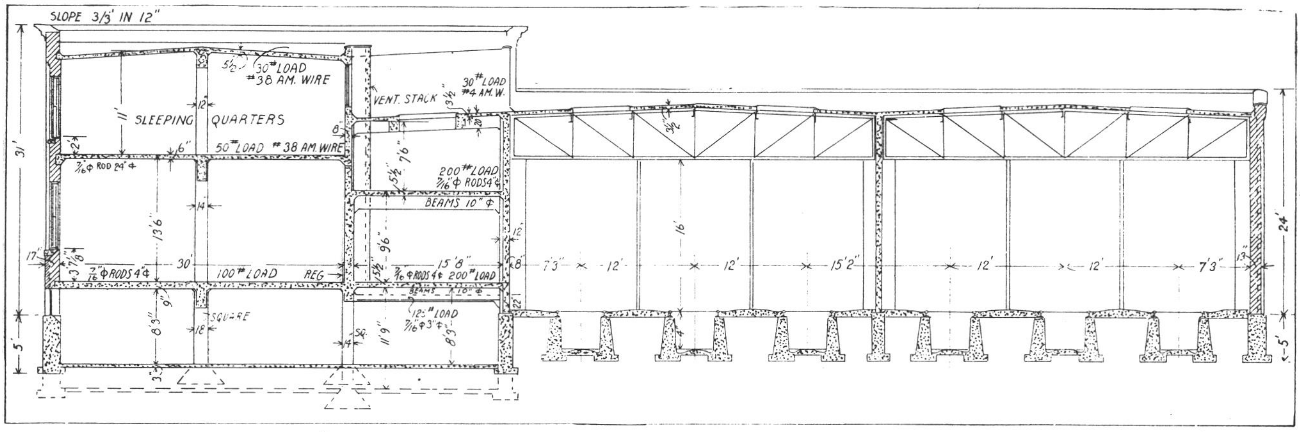
Second Floor Plan of Car House Portion, Lake Street Station

The floors throughout the storage portion of the house are of concrete, while in the office portion and the trainmen's quarters, a composition asphaltum flooring is used. This company has found the asphaltum type of floor more satisfactory for use in certain cases than the concrete floors, as it is more yielding and does not cause the feet to tire so quickly as does the concrete, also the floor is warmer. The pits have a depth of 4 ft. and the pit walls and decks are of concrete. Both decks and pit floors are pitched and well drained. The floors in the office bay on the first and second stories are 9 and 6 ins. in thickness and are designed for loads of 100 and 50 lbs., respectively.

The two storage bays are double ended and all of the cars are brought in at the east end, and after being inspected and the smaller repairs made are taken out of the west end. Each of the tracks is protected with rolling steel fire doors, which have a height from the top of the rail to the bottom of the roof trusses of 16 ft.



Side View of Car House Portion, Lake Street Station



Section Through Car House Portion, Lake Street Station

The first floor of the office bay is divided into two sections by a concrete wall running its entire length. The smaller of these sections, measuring 15 ft. 8 ins. wide, is given over to oil rooms, shop storage rooms, boiler room and toilet rooms for the men employed in the inspection and storage bays. With one exception there is only one door between these two portions of the bay, and the danger of fire starting in the oil, storage or boiler rooms and spreading to the larger portion of the bay is decreased materially. The greater part of the larger section is given over to a trainmen's room 151 ft. long and 30 ft. wide. About 600 men work out of this station, and it is in this room that these men make out their reports and attend to any other business connected with their work. A long desk running almost the entire length of the room has been installed for the use of the men. This is fitted with incandescent lights at frequent intervals and in the center of the desk, for its entire length, are glass covered schedule racks. In this room lockers have also been furnished for the use of all of the men.

To the east of the trainmen's room is located the foreman's office and the transfer office. All of the business of the station is handled from this office. A cashier is maintained here who has charge of and counts all of the cash, which is later audited at the main office. The office equipment includes the usual number of desks, racks for the transfers and a safe. Adjoining the office are two toilet rooms for the use of the office employes.

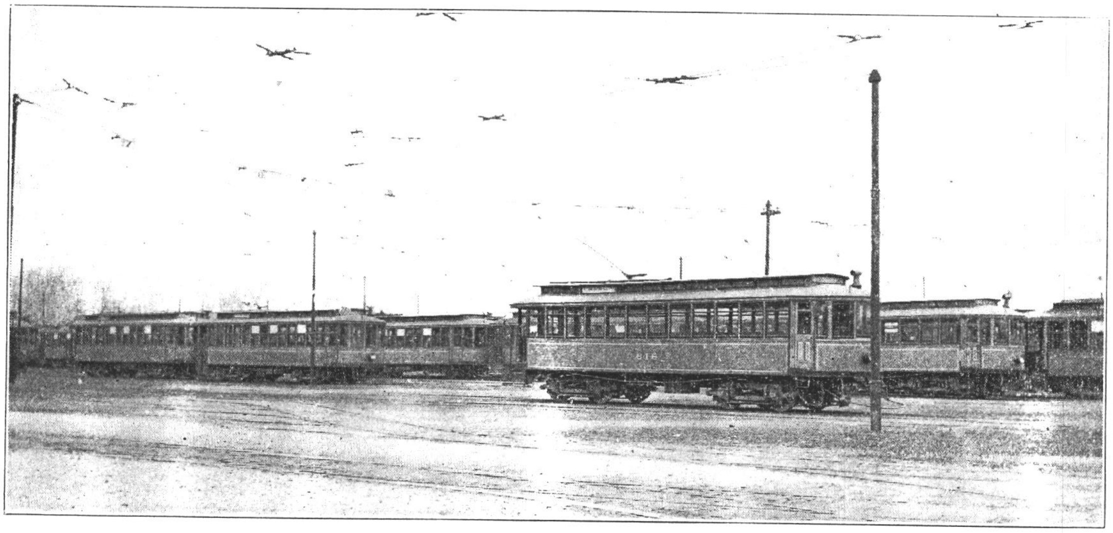
The toilet facilities for the trainmen are housed in a room 39 ft. long located to the west of the trainmen's room. This room is fitted up with the most modern and sanitary toilet fixtures, and in addition contains three shower baths. When the trainmen desire to use these baths, they can obtain towels gratis by applying at the office.

Among the interesting features in this station are the club rooms, which occupy the entire second story of the office bay, and which were equipped and are maintained by the company. The greater part of this portion of the building is devoted to a billiard room and gymnasium, which occupies the whole width and 179 ft. of the length. Five pool tables have been installed, the room is neatly furnished with comfortable benches and chairs, and every effort has been made to make the place comfortable and homelike. It was the original intention to operate these tables free of charge, but, at the request of the men, who felt that with some slight expense, more interest would be taken in the games, a charge of 1 cent a cue is made. The money thus taken in is put into a fund with which to purchase new equipment and conveniences for the club rooms.

There is spare room in the pool room for an additional billiard table, which will soon be installed. A space along the south wall has also been reserved for a bowling alley. A Victor Victrola was also purchased by the company and placed in this room, but up to the present time it has not proved as popular with the men as it was hoped that it would. This is probably due to the fact that there is always considerable noise in the pool room, and the men are not able to appreciate the machine as much as they would in a quieter place. A refreshment stand is also maintained in the pool room, where all kinds of soft drinks, cigars and tobacco are sold. This is not maintained with the idea of making any money for the company, and all of the goods are sold to the men at cost. Peanut, gum and candy slot machines are also kept at this stand on a percentage basis.

The gymnasium is equipped with three pulley weight machines, iron and wood dumb bells, Indian clubs and a punching bag. No boxing gloves or wrestling mat are provided, as it has been found that when the men engage in sports of this kind they are liable to carry things a little too far, with the result that bad feeling is often aroused between individuals.

Adjoining the pool room on the west is a library. This room is decorated in two shades of green and the same neat and homelike appearance that characterizes the pool room has been maintained. This room, nearly 80 ft. long, is furnished with large library tables and with many chairs and large comfortable rockers. Several smaller tables are also furnished for checker playing, in which the men have taken quite an interest. A large number of the best weekly and monthly magazines are always kept on file, and, in addition, the public library has placed in this room a large number of books which the men are allowed to take home and keep for two weeks, after signing for the book in question.



View in Open Storage Yard, Lake Street Station

To the west of the library is a sleeping room in which are 18 cots for the use of the men whenever they feel so inclined. For extra men waiting for runs, or who may be assigned to pull-outs, or in the case of men who are held on account of snow storms, there is an opportunity to rest, and it is for that reason that the sleeping room was established. The pillows and mattresses are covered with denim, and all that is required of the men when they use these cots is that they remove their shoes. Blankets are provided when desired. A public telephone is also provided for the use of the men. This has no connection with the company switchboard. There has been a demand on the part of the men for a barber shop, and the company has made arrangements with a local barber to install a two-chair shop in the pool room. The company will furnish rent, heat, water and light free, and the men will receive barber service at a greatly reduced price. The clubrooms are in charge of two custodians.

The entire building is heated by direct radiation with the steam coils placed on the walls of the rooms near the floor. The lighting is all by incandescent lamps, and to maintain a constant voltage for these a small motor-generator set has been installed on the first floor.

The open storage portion of the station is composed of 33 tracks, and, as stated above, has a capacity of 184 cars. These tracks are reached from the main tracks, in front of the office bay, by two tracks at each end and running the depth of the property. From these tracks connections may be made with all of the open storage tracks. One advantage of laying out the tracks in this manner is that the cars operating on the street are not delayed, and there is not the annoyance to the passengers as is the case when ladder tracks are branched directly from the street track. All of the special work with the exception of the four curves branching from the main track, are on the company's property. As is shown on the plan view of the station, the layout of the special work at the two ends of the closed storage bays is not the same, the main branch track leading to the bays being placed on an angle at the west end, while at the other end the tracks lead directly into the bays. This layout at the west end of the building is due to the difference in elevation between the main track and the entrance into the west end of the bays; the tracks were laid so as to be practically level. All of the cars entering the open storage section do so at the west end and go out at the east end. This is opposite to the direction in which the cars are moved through the closed bays. The greater portion of the yard has a cinder floor, but in some cases granite paving blocks have been laid between the tracks. The overhead work is supported on iron poles. A 15-in. sewer has been laid across the yard by the company. This connects with the city sewer.

In addition to this station just completed this company now has under construction an additional station, which, in point of design, construction and layout, is very similar to the station just described. The closed portion is built of brick and consists of a two-story office portion and two closed storage bays. The open storage portion is laid out in the same manner as the Lake street station, and the storage capacity of building and yard will be 162 cars. This station is rapidly nearing completion, and it is expected that it will be finished in the course of a few weeks. Both of the stations were designed and constructed by the company.

New Trolley Station to Open
Minneapolis Morning Tribune (1909-1922); Nov 4, 1910;
ProQuest Historical Newspapers Minneapolis Tribune (1867-19
pg. 9

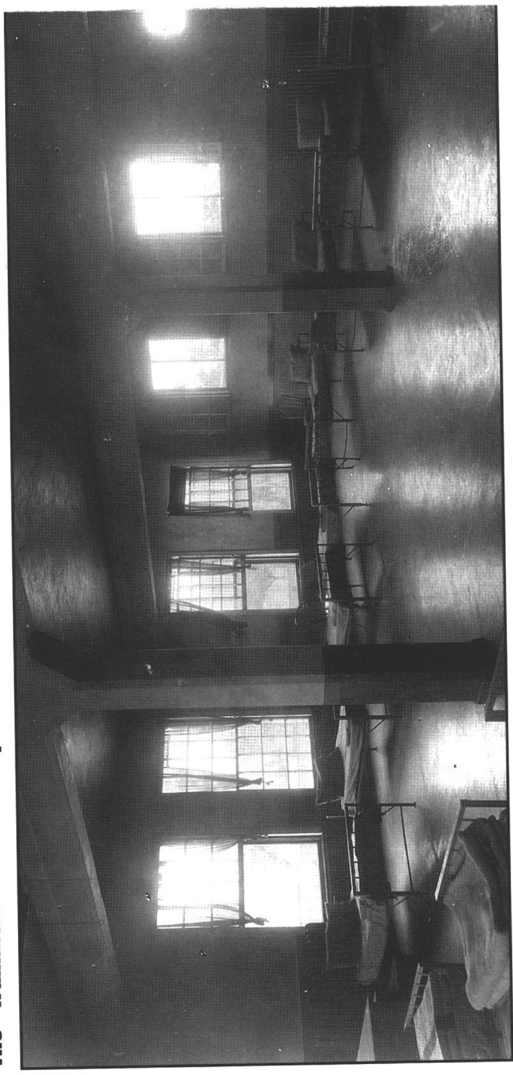
New Trolley Station to Open

Huge Lake Street Plant of Transit Company to Start Saturday Night.

The huge Lake street station of the Twin City Rapid Transit company at Lake street, near Minnehaha avenue, will be formally opened next Saturday night with a force of 400 men in charge of 160 cars. This will later be enlarged to a staff of 600 men and 225 cars. The big building, according to street railway officials, will then be taxed to but half its capacity. The remaining space will be devoted to the enlargement of the service in years to come.

The opening of the station will necessitate a radical change and rechristening of stations. The Bloomington station will be abandoned at the time of the second increase in the number of cars in the new Lake street headquarters. The new station will be headquarters for all cars operated over the Minnehaha Falls line, the Snelling-Minnehaha, the Selby-Lake, the Lake street, the Cedar and the Bloomington lines.

The East Side station will retain its name, but the name of the Thirty-first street station will be changed to Nicollet station. According to A. W. Warnock, general passenger agent of the company, there will be no new system of rerouting cars save for the slight changes made in getting the cars to their new headquarters.



The "trainmens rest-room" upstairs at Lake Street Station. A. D. Roth photo for TCRT.

ERJ 5-28-1910

NEW SHOP AND CAR HOUSE BUILDINGS AT MINNEAPOLIS

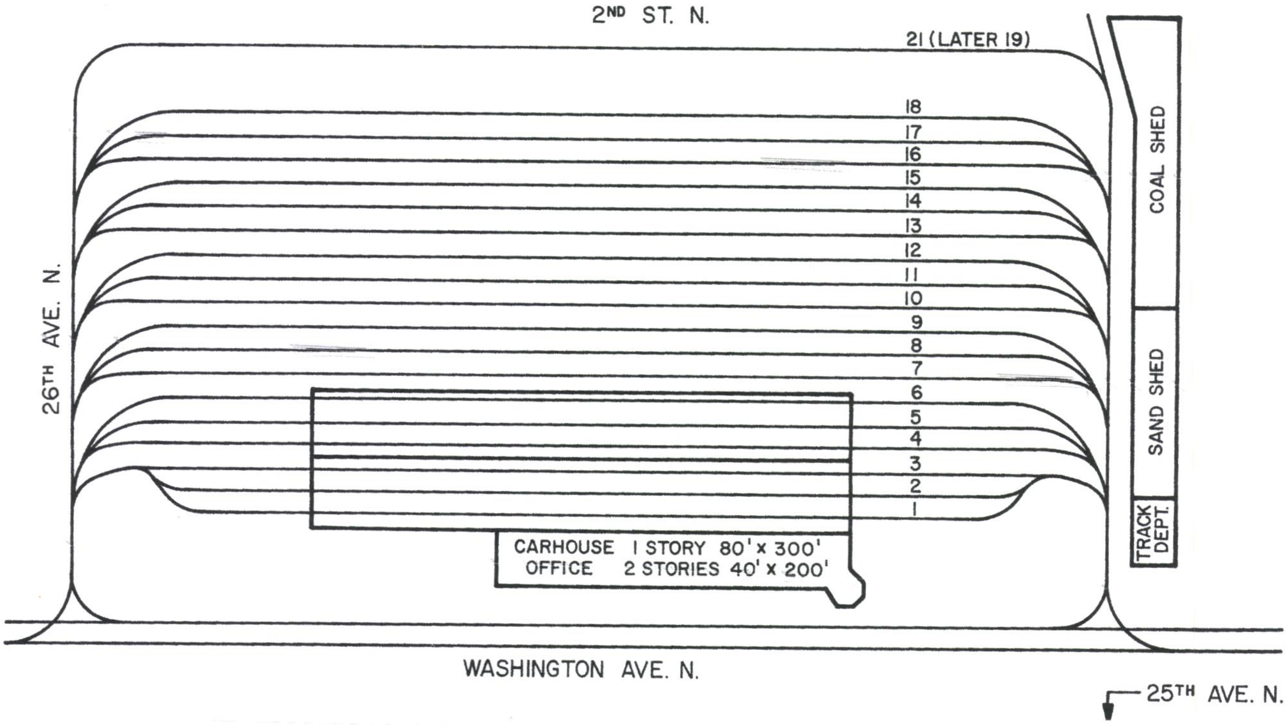
The Twin City Rapid Transit Company now has under way the erection of a car house and repair shop at Lake Street in Minneapolis, the fitting up of a new general car repair building at the large Snelling Avenue shops, and the installation of a small part of the equipment of a new steel and gray iron foundry. A general storehouse of fireproof construction has recently been completed for occupancy. The new car house and repair shop in Minneapolis is located on Lake Street. This building will have exterior dimensions of 128 ft. x 302 ft. and will have track room for 36 large cars. The station, however, is intended to take care of 300 cars and be the operating headquarters for a division employing 1,000 trainmen. A section of the building, 80 ft. wide by 302 ft. long, will provide car storage. The remaining section, 48 ft. x 302 ft., will be two stories high and will have a basement. This portion of the building is being built of reinforced concrete. The car house will have a steel framework and both sections will have paving brick walls for the first story and brick covered with stucco for the second story and gables.

The two-story portion of the station will be subdivided into quarters for the station foreman, trainmen, a restaurant and kitchen on the first floor and provision for sleeping quarters on the second floor. The basement will provide storage space for 1800 tons of hard coal and 800 tons of soft coal, which are about the quantities needed for heating the cars and building during one season. This large storage space will thus prevent embarrassment in the event of strikes. Provision for handling the coal and other heavy supplies will be afforded by a freight elevator which will serve the basement and two floors of the building. Coal will be brought into the car house over the electric railway tracks and unloaded through the car house floor into industrial railway coal cars operating on tracks in a tunnel underneath the car house floor and in the basement. The new car house will be provided with hot and cold running water and compressed-air outlets.

North Side Station
(North Minneapolis Station)
1914-1953

Built during 1914 on Washington Ave. N. between 25th Ave. N. and 26th Ave. N.. Its cars were transferred from Lake Street Station by pulling-in to North Side Station on completion of their runs October 24, 1914. Regular operation began the next day, October 25th.

As of May 1947 lightweight cars were assigned to track 4 and car washing machinery was located on track 6. During 1950 that part of the carhouse containing tracks 4 thru 6 were converted for bus operation. The last streetcar operation occurred July 10, 1953. The facility was converted into a bus garage.


MINNEAPOLIS ST. RY. NORTH MINNEAPOLIS "NORTHSIDE" STATION

2ND ST. N.
21 (LATER 19)
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
COAL SHED
SAND SHED
TRACK DEPT.
26TH AVE. N.
CARHOUSE 1 STORY 80' x 300'
OFFICE 2 STORIES 40' x 200'
WASHINGTON AVE. N.
25TH AVE. N.

Snelling, Nicollet, Lake Street and North Side Stations were all built to the same basic plan, and all featured an upstairs club room for trainmen. A. D. Roth photo for TCRT.

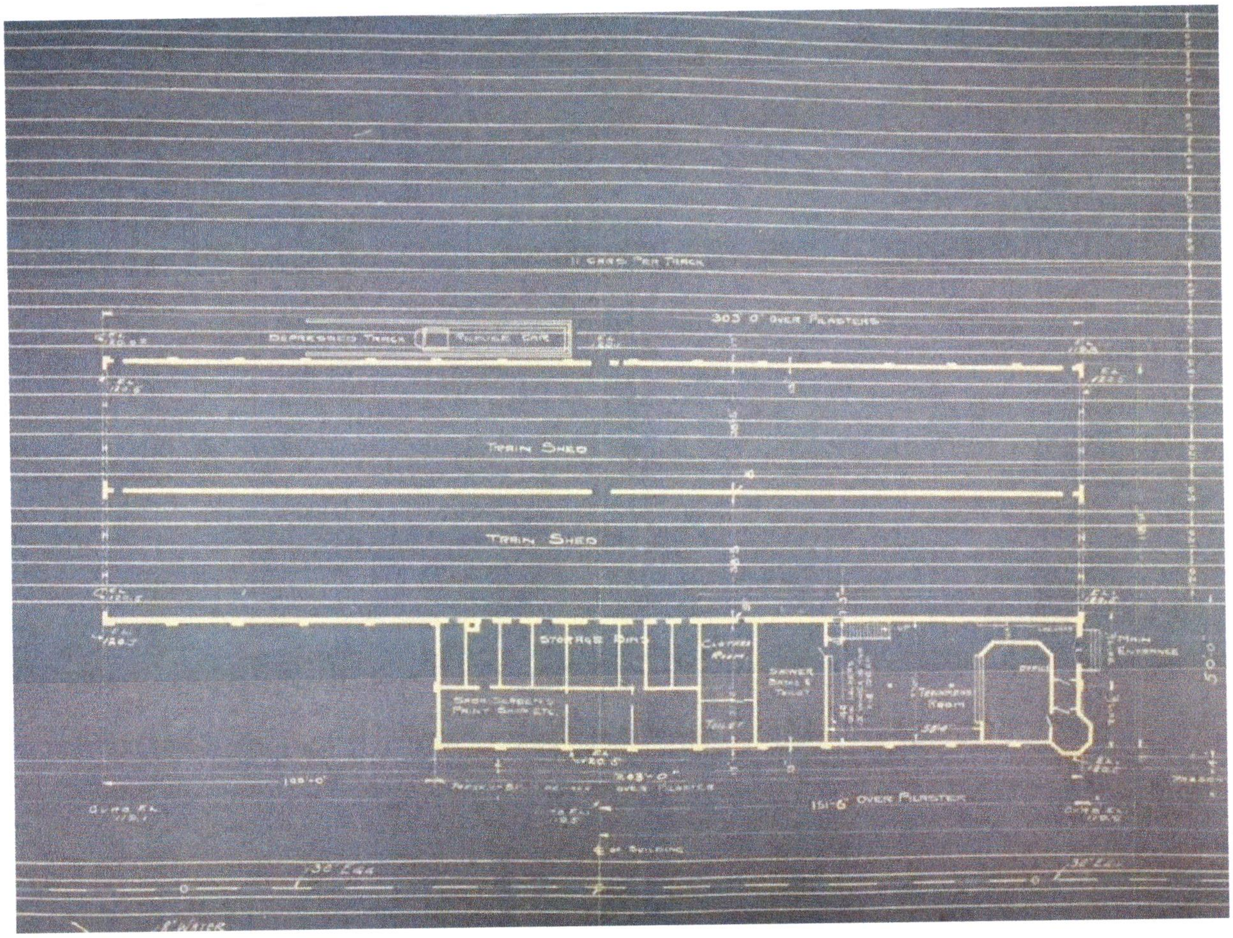

11 CARS PER TRACK
303' 0" OVER PILASTERS
DEPRESSED TRACK
TRAIN SHED
TRAIN SHED
STORAGE BINS
CLOTHES ROOM
SHOWER BATHS & TOILET
TRAINMENS ROOM
OFFICE
MAIN ENTRANCE
SASH, SCREENS, PAINT SHOP ETC.
TOILET
50'-0"
151'-6" OVER PILASTER
℄ OF BUILDING

Figure 54. First floor plans, 1914 building, source: Northwest Architectural Archives

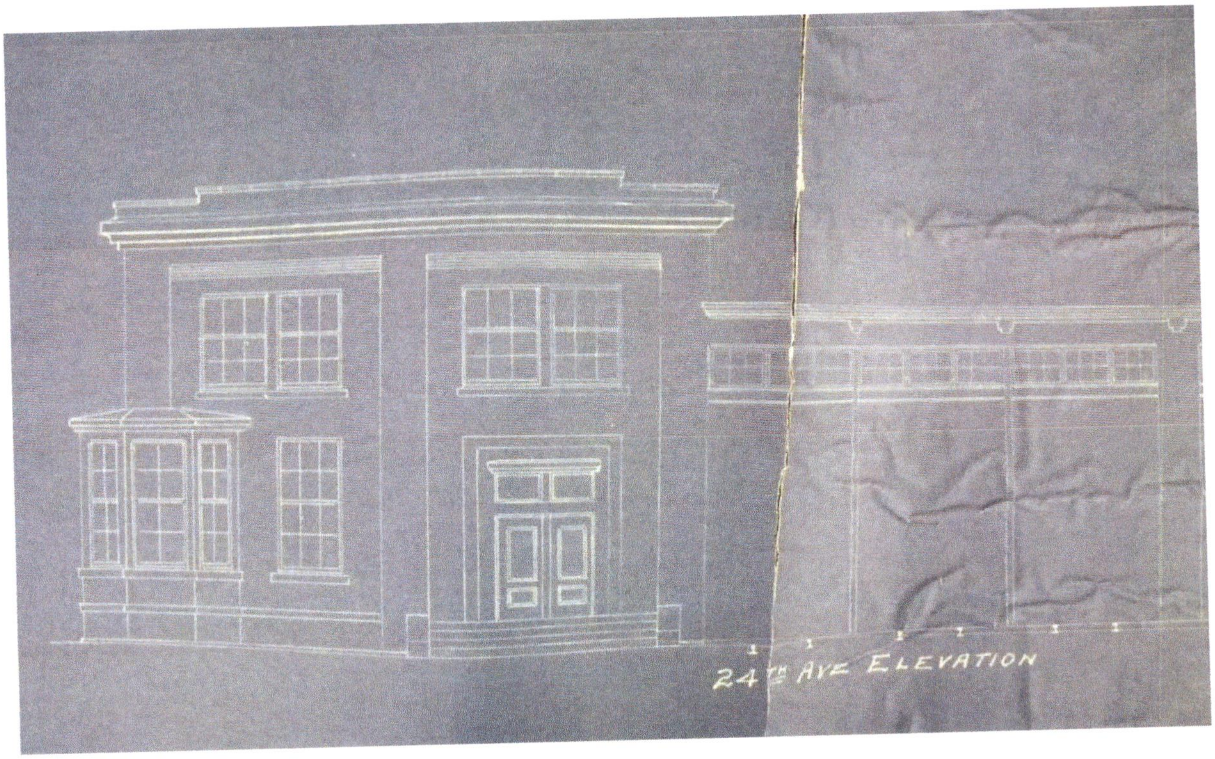

24TH AVE ELEVATION

Figure 59. 24th Avenue elevation, foreman's office bay window, main entrance, streetcar shed bay doors, source: Northwest Architectural Archives

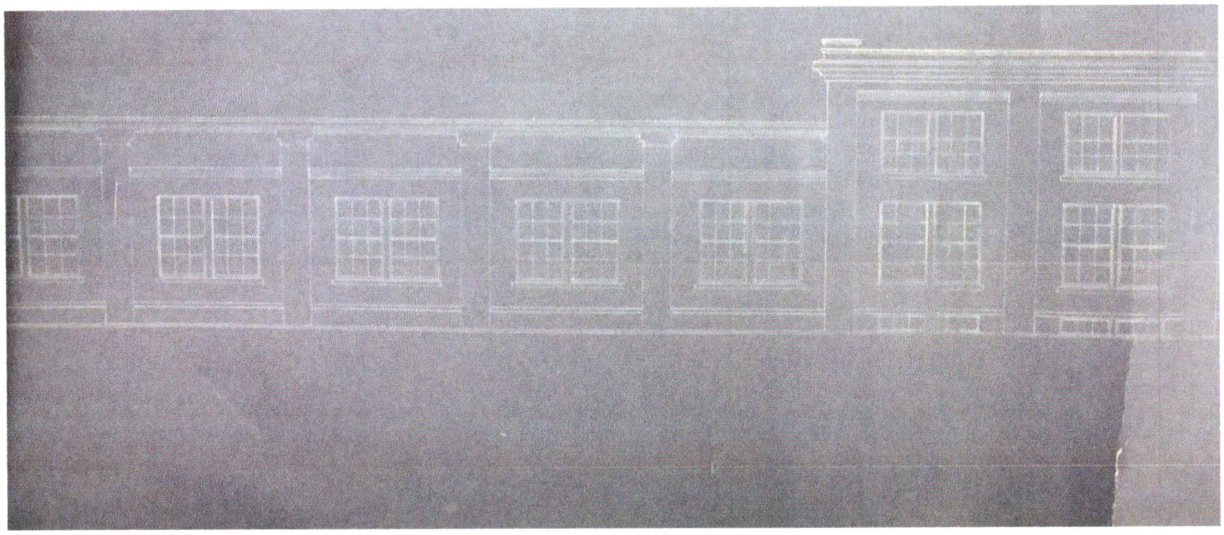


Figure 58. Partial elevation, Washington Avenue, source: Northwest Architectural Archives

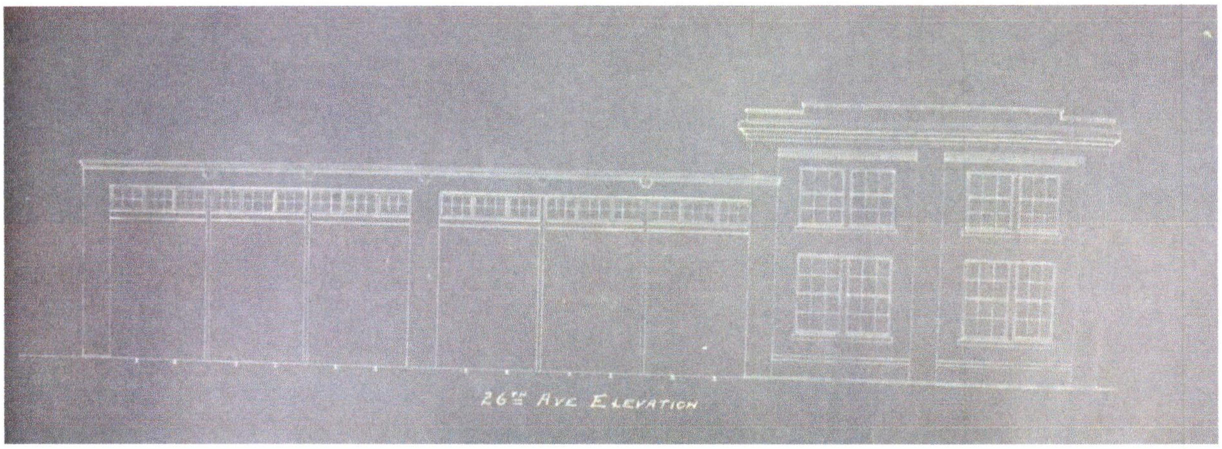
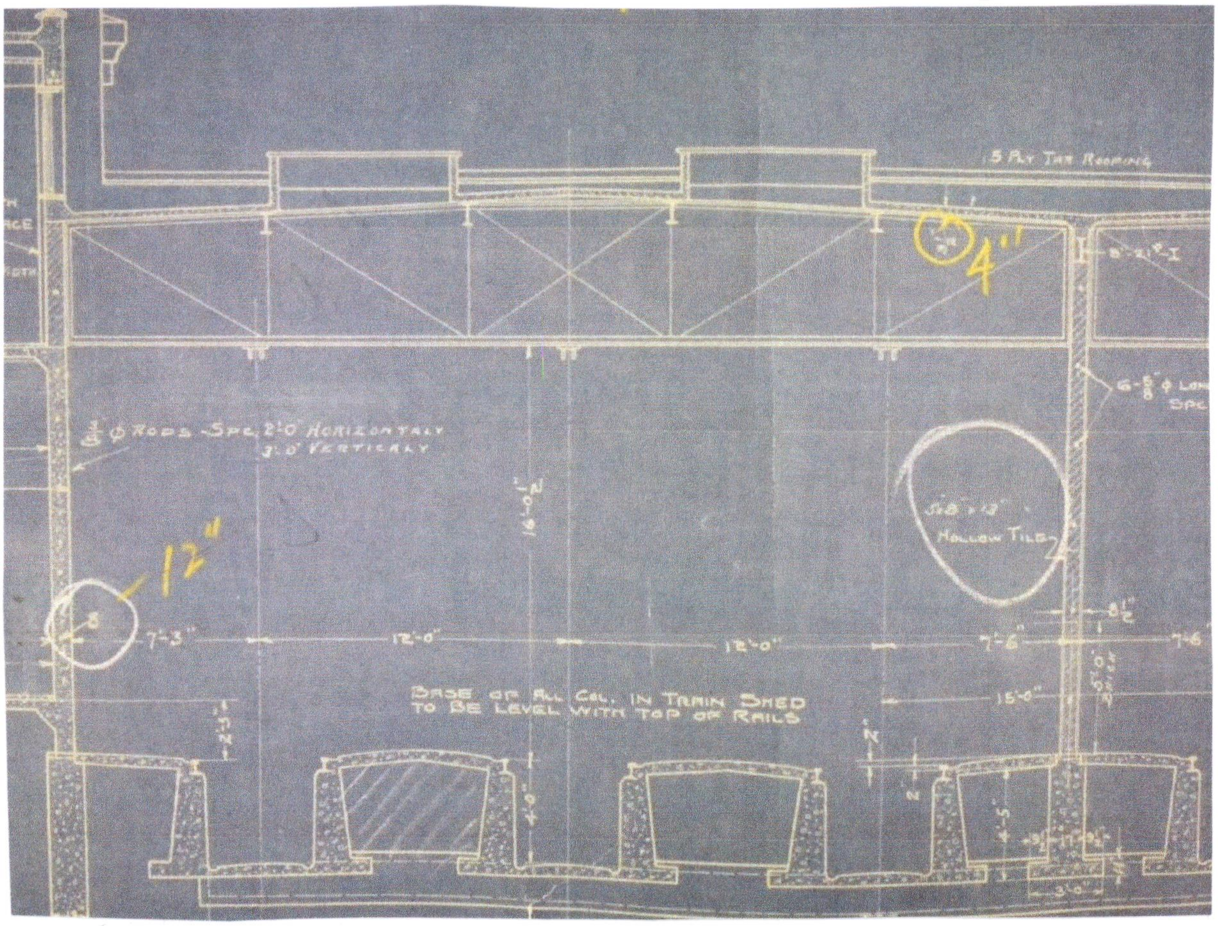

26th Ave Elevation

Figure 60. 26th Avenue elevation, source: Northwest Architectural Archives


5 Ply Tar Roofing
4"
8-21"-I
6-5/8" φ
3/8 φ Rods - Spc. 2'-0 Horizontaly
3'-0" Vertically
16'-0"
12"
5'-8" × 12" Hollow Tile
7'-3"
12'-0"
12'-0"
7'-6"
8 1/2"
Base of All Col. in Train Shed
to be Level with Top of Rails
15'-0"
2'-3"
4'-0"
4'-5"
3'-0"

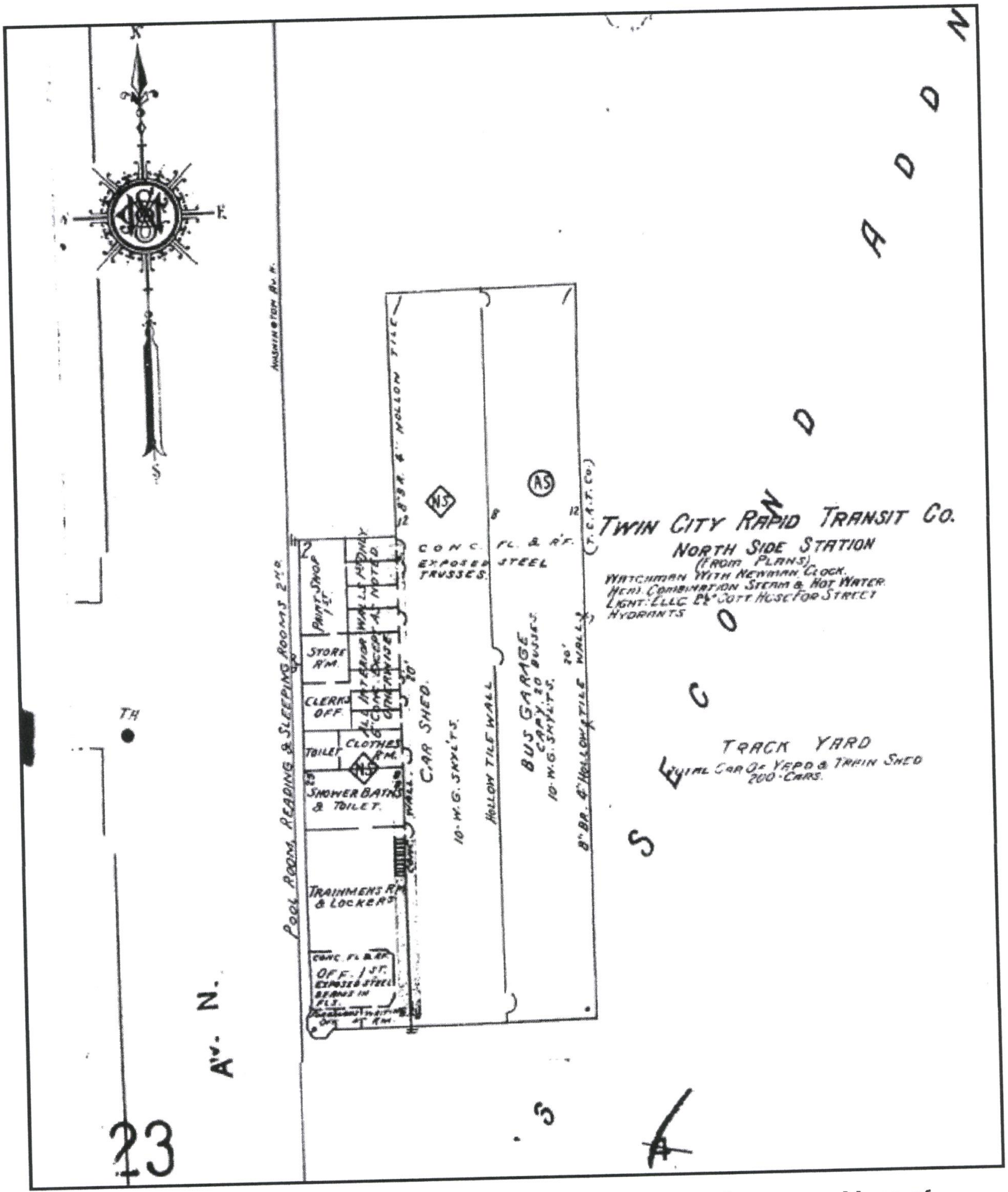
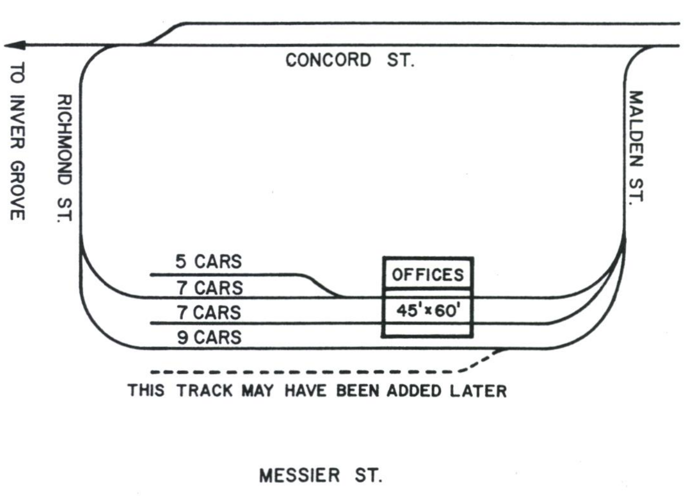

N
E
S
WASHINGTON AV. N.
POOL ROOM, READING & SLEEPING ROOMS 2ND
PAINT SHOP 1ST.
STORE RM.
CLERKS OFF.
TOILET
CLOTHES RM.
SHOWER BATHS & TOILET.
TRAINMENS RM. & LOCKERS
CONC. FL. & RF.
OFF. 1ST.
EXPOSED STEEL BEAMS IN FLS.
CONC. FL. & RF.
EXPOSED STEEL TRUSSES.
8" BR. & 4" HOLLOW TILE
NS
AS
CAR SHED.
10-W.G. SKYL'TS.
HOLLOW TILE WALL
BUS GARAGE
CAP'Y. 20 BUSSES
10-W.G. SKYL'TS.
8" BR. 4" HOLLOW TILE WALL
(T.C.R.T. CO.)
TWIN CITY RAPID TRANSIT CO.
NORTH SIDE STATION
(FROM PLANS)
WATCHMAN WITH NEWMAN CLOCK.
HEAT: COMBINATION STEAM & HOT WATER.
LIGHT: ELEC.
HYDRANTS
TRACK YARD
TOTAL CAP. OF YARD & TRAIN SHED 200 CARS.
SECOND ADDN
TH
AV. N.
23
5
4

Figure 3. North Side Station, source: Sanborn Map Company, Insurance Maps of Minneapolis, Minnesota, vol. 1, 1912-April 1951, sheet 24.

MINNEAPOLIS & St.PAUL SUBURBAN RAILROAD
South St.Paul Yard
South St.Paul

A small carhouse and four-track car storage yard was constructed during 1919-1920 in South St.Paul east of Concord St. between Richmond St. and Malden St. Armour & Company had opened its meat packing plant in 1919, which with the existing Swift & Company meat packing plant, produced considerable rush hour traffic. To eliminate much deadhead mileage for rush hour cars this small facility was built. It was variously called South St.Paul Yard, Malden St. Carhouse, or Spring Park Carhouse. The loop track through the facility was referred to as the Spring Park Loop. The facility opened for operation February 20, 1920.

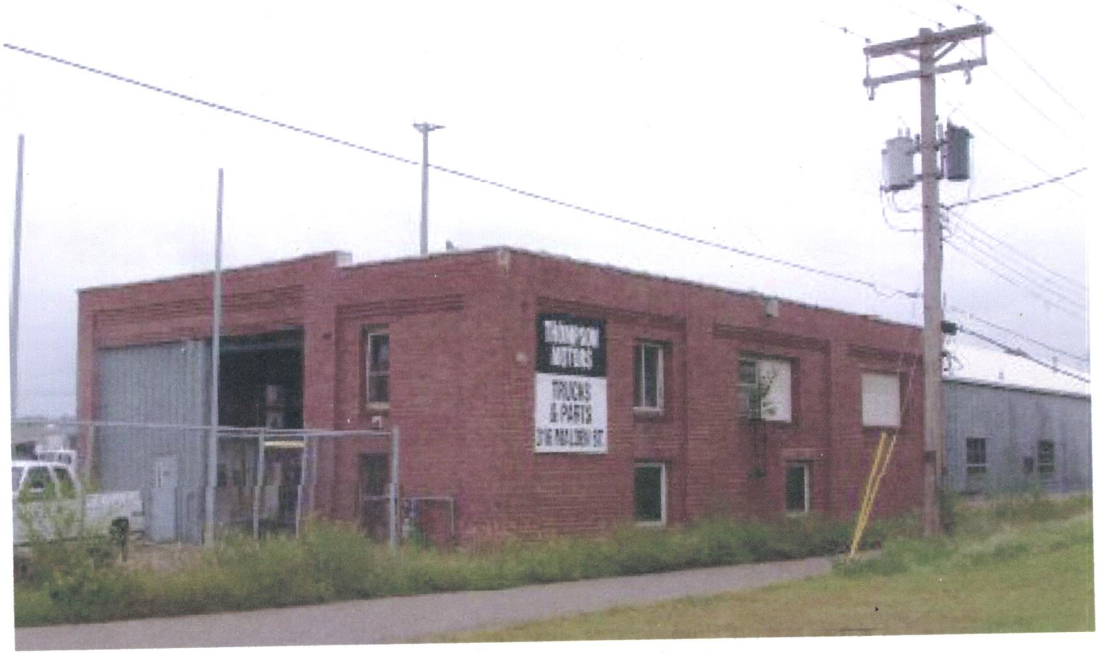
According to the construction records, rail and special work (seven switches, including two on Concord St.) were removed April 12-15, 1927. The property was sold to John F. Noble in 1938. It was used for many years as a truck garage and shop by LCL Transit Inc.



MPLS. & ST. PAUL SUBURBAN R.R. CO.
LOCAL SUBURBAN DIV.-SOUTH ST. PAUL LINE
SOUTH ST. PAUL YARDS
1919

St.PAUL CITY RAILWAY
St.Clair St. Yards

A car station was proposed for the south side of St.Clair St. between Toronto and Oneida Streets. The proposed plan indicated a small operations building, with no interior trackage, adjacent to six open storage tracks. A zoning change by the city was needed to permit construction. This rezoning was refused and the car station never built. The land had been acquired in 1916 and some money spent on trackwork, details not specified. Small amounts of money were expended during 1918-1919 on grading grounds and laying track. This probably pertained to a "dump track" located at the Toronto St. end of the property. Real estate records indicate additional purchases of lots in 1917 and 1923. All of the property was sold to the City of St.Paul in July 1929.



South St Paul Carhouse as it appears in 2006

Twin City Rapid Transit Company, Minneapolis, Minn.—A new $90,000 carhouse will be built by the Twin City Rapid Transit Company at St. Paul. The new station will take care of 100 street cars, thirty-six in the carhouse and the remainder on outside storage tracks, and will include trainmen's club rooms and offices for foremen and clerks. ERJ FEB 1917 Proposed St. Clair St. Yards

SNELLING STATION
SNELLING SHOPS
1907-1954

Desiring to have increased capacity for carbuilding, car repairing and rebuilding in a location more advantageously situated with respect to the entire street railway system, a site was selected at Snelling and University Avenues in St.Paul, "midway" between the downtown areas of Minneapolis and St.Paul. The first real estate was purchased in 1902. The property on which the car station and shop facilities was built comprised 37.46 acres. All of the buildings, carhouse and shop, on the property were constructed of cement bricks and hollow cement blocks built upon reinforced concrete foundations. Columns, floors and roofs were also built of reinforced concrete. The cement bricks and blocks were manufactured on the premises.

Track entrance to the carhouse from Snelling and University Avenues was begun in September 1904. During 1906 construction was substantially completed on the carhouse-substation building. The office-substation portion measured 41' x 414' and the carhouse portion 120' x 360'. This facility was intended to replace the Midway, Selby Avenue and Smith Avenue Carhouses. Operations from Smith Ave. Carhouse were transferred to Snelling Station June 2, 1907. The other operations were transferred and Snelling Station formally opened for service on June 13, 1907.

Construction work on the shop buildings began in July 1905. During 1906 construction was substantially completed on the Machine Shop, Paint Shop, Pipe Shop (Blacksmith Shop) and Powerhouse, Carpenter (Mill) Shop, and Dry Kiln. All buildings were conveniently located with reference to economically carrying on the work of manufacturing and repairing cars and car equipment with the least amount of handling. Each piece of work followed a prescribed regular course from building to building until it was turned out finished and ready for use. The transfer table could handle steam railroad freight cars directly into any of the buildings. It took power from a wire carried against the side of the transfer table pit protected by a projecting ledge of concrete with a wood guard. Along each side of the transfer table pit were 30' wide planked platforms (later replaced with concrete) to allow trucking of materials or work from one shop to another without using the transfer table.

Installation of shop machinery began in January 1907. The machinery and tools in each shop were the most modern available and all were driven by electric motors. In most cases each machine was driven by its own 230 volt D.C. motor. Machines of less than 3 h.p. were grouped together. The Machine Shop had three traveling cranes of 12,000 lbs. capacity each, and traversed the entire central bay, 50' x 200', which was used for motor and truck repair and construction. On the second floor the lighter work was done--such as armature winding and air compressor repair.

The move from 31st St. Shops to Snelling Shops took place during August and September 1907. The completed shop facilities went into service during September and October 1907. Approximately 500 to 550 persons were employed in the new shop facilities.

Property adjacent to the east, approximately 20.52 acres, had been acquired during September and October 1907 for expansion purposes. Not immediately needed for operations, the property was leased to others who built and operated the "Motordrome" race track on the site. After the demise of the "Motordrome", three parcels of this tract were sold in 1920 to Montgomery, Ward & Company which then constructed a large retail/catalog store/warehouse.

Construction of additional shop facilities continued over the ensuing years.

Heating Plant	1907	
Car Storage Shed and tracks	1907-1908	
Foundry	1908	(Equipped to manufacture all of the company's castings of brass, steel and gray iron, except for wheels and malleable iron items.)

Storehouse 1908-1910
General Repair Shop 1909-1910

The Erecting Shop shown on some plats east of the Paint Shop was never built. Instead the west side of the Paint Shop was remodeled, which included traveling overhead cranes, for these functions. Thereafter the Paint Shop was referred to as the Erecting Shop.

Track Dept. Storehouse 1910-1911
Forge & Structural Shop 1910-1911
Lumber Shed(s) 1910-1911
Fire Pumps 1911-1912
Overhead Dept. Building 1911-1912
Coal House (Bin) 1912
Oil Storage Building 1912-1913 (Cement & Oil House)
General Repair Shop addition 1914
Kitchen and Dining Room built in the former Pipe Shop 1916
Transfer Table rebuilt 1916 and November 1917-1918 This included a new operator's cab and overhead trolley current collection.
Transfer Table pit extended 1919
Sprinkler system installed in the buildings; 100,000 gallon Water Storage Tank built 1925-1926
Wheel Shop/Storage 1925
One overhead crane in the Erecting Shop was altered to turn cars onto their sides 1925

The Car Storage Shed was destroyed by fire 8-17-1925. The storage tracks of this facility were numbered from right to left (see map): 8-7-1-2-3-4-5-6. After the fire, later in the 1920's, the entire special work layout was relocated southward. Track removal was not undertaken until 1942:

Track Number	L.F. Removed	Switches Removed
2	436.2	
4	381.7	1
5	353.0	1
6	317.0	1
7	349.7	

An additional 148.2 l.f. were removed from tracks 1 to 6 in 194?.

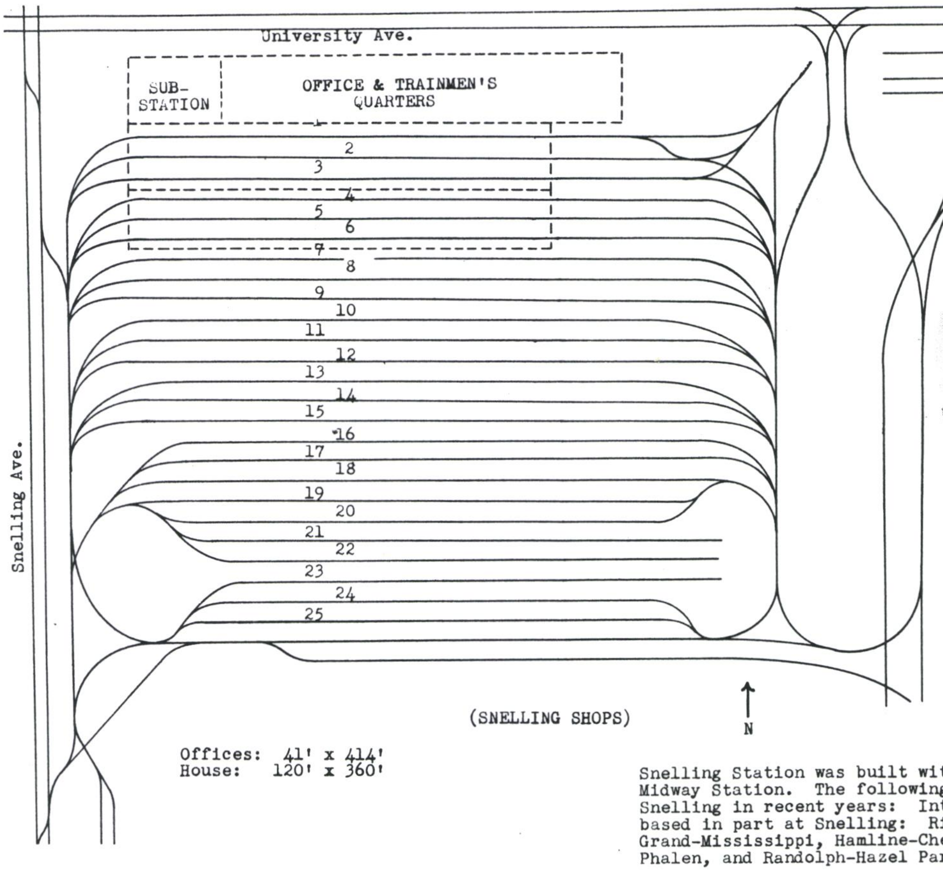
As of May 1947 the [redacted] tracks at Snelling Station were used for the following purposes.

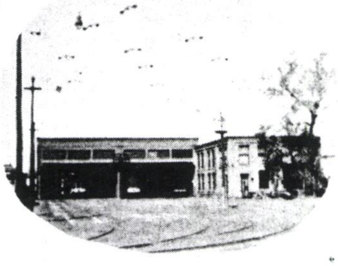
Track 6: Car Washing Machine.
7: Trash.
8-9: Front Exit Gate cars.
10-11: One Man Cars.
12-13: PCC Cars.
14-15: One Man Cars.
16: Snow Plows and Sand Car 43.
17-18: Open in daytime for student training. Probably Lightweight cars and more One Man cars at night.
19: Bad Order cars from Lake St. and Nicollet Stations.
20: Bad Order cars from North Side, East Side and Duluth Ave. Stations.
21: O.K. cars for Duluth Ave. Station.
22: O.K. cars for East Side Station.
23: O.K. cars for North Side Station.
24: O.K. cars for Nicollet Station.
25: O.K. cars for Lake St. Station.

If my memory is correct, the Kitchen-Dining Room (former Pipe Shop/Blacksmith Shop) was remodeled into a Bus Repair Shop, sometime after 1938. During 1949 this was replaced by a large Bus Repair Shop (Rehabilitation Center) which was built in the open space between the Erecting Shop and the

Mill/Carpenter Shop.

Streetcar operation from Snelling Station ended November 28, 1953. The carhouse and yard tracks were used in the process of selling and scrapping the passenger and service equipment until this work was completed during 1954. The Snelling Shops were used in the final dismantling and selling of the passenger and service equipment. When this work was completed later in 1954 the real estate together with the shop buildings and carhouse-substation building north of the Transfer Table Pit were sold. The buildings were subsequently demolished for construction of Midway Shopping Center. The Erecting Shop and Bus Repair Shop south of the Transfer Table Pit were incorporated into construction of a large Bus Garage and Repair Shop. The other buildings with the exception of the Storehouse were demolished. Real estate retained comprised 10 acres. The Storehouse was not demolished until the late 1980's. Metro Transit continued to use the bus facility until May 2001 when it was replaced by a newly constructed bus garage on the east side of St.Paul.





Snelling Carhouse, east end; 28 April 1952. (EHN)

Snelling Station

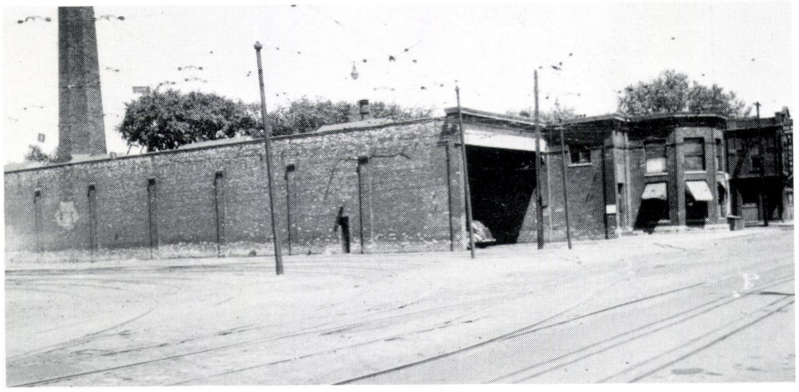
Offices: 41' x 414'
House: 120' x 360'

Snelling Station was built with Snelling Shops and replaced Midway Station. The following lines were based entirely at Snelling in recent years: Interurban, Snelling Ave.; lines based in part at Snelling: Rice-South St. Paul, Selby-Lake, Grand-Mississippi, Hamline-Cherokee, St. Clair-Payne, Dale-Phalen, and Randolph-Hazel Park-Mahtomedi.

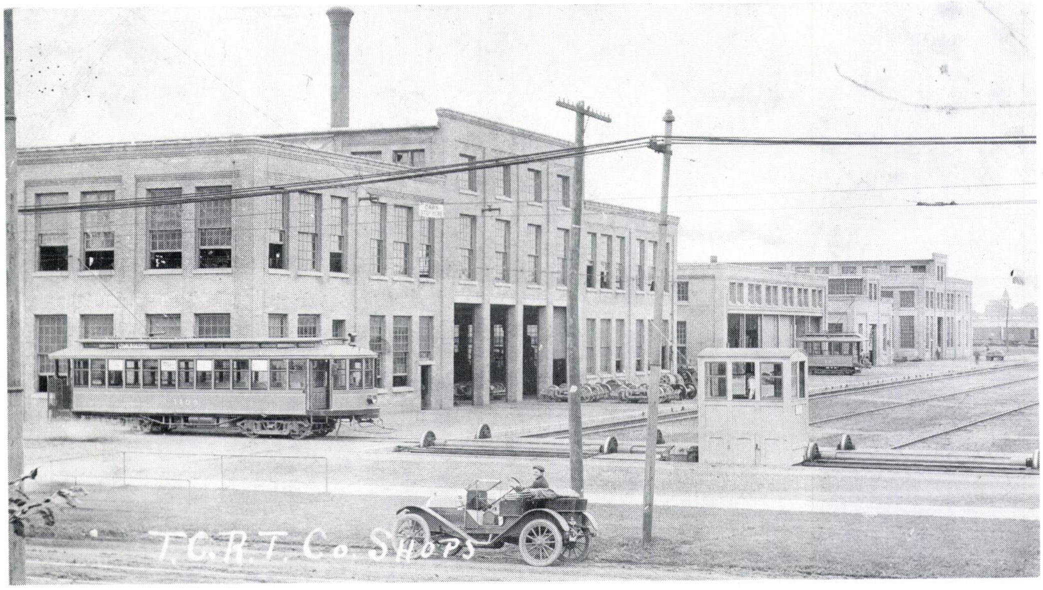
Snelling Station was first to get PCCs.

In 1949 certain trackage was rearranged to permit easier access and egress. Compare this track plan with that of Snelling Shops & Station.

Opened: 1907 Closed: 31 December 1953 (tentative)

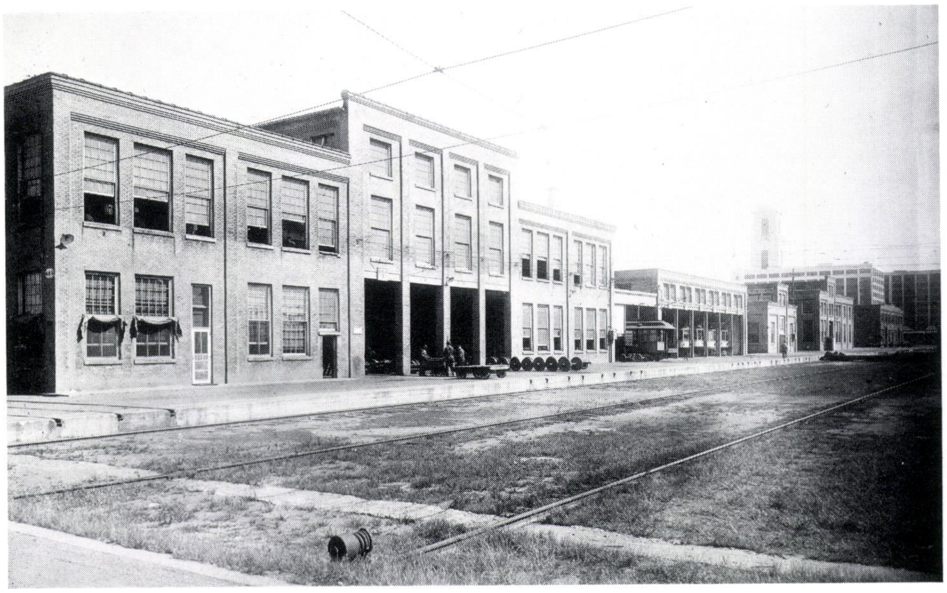


Duluth Ave. Station, St. Paul, as it appeared shortly after being removed from service in 1952. (Joe Hutchinson collection)



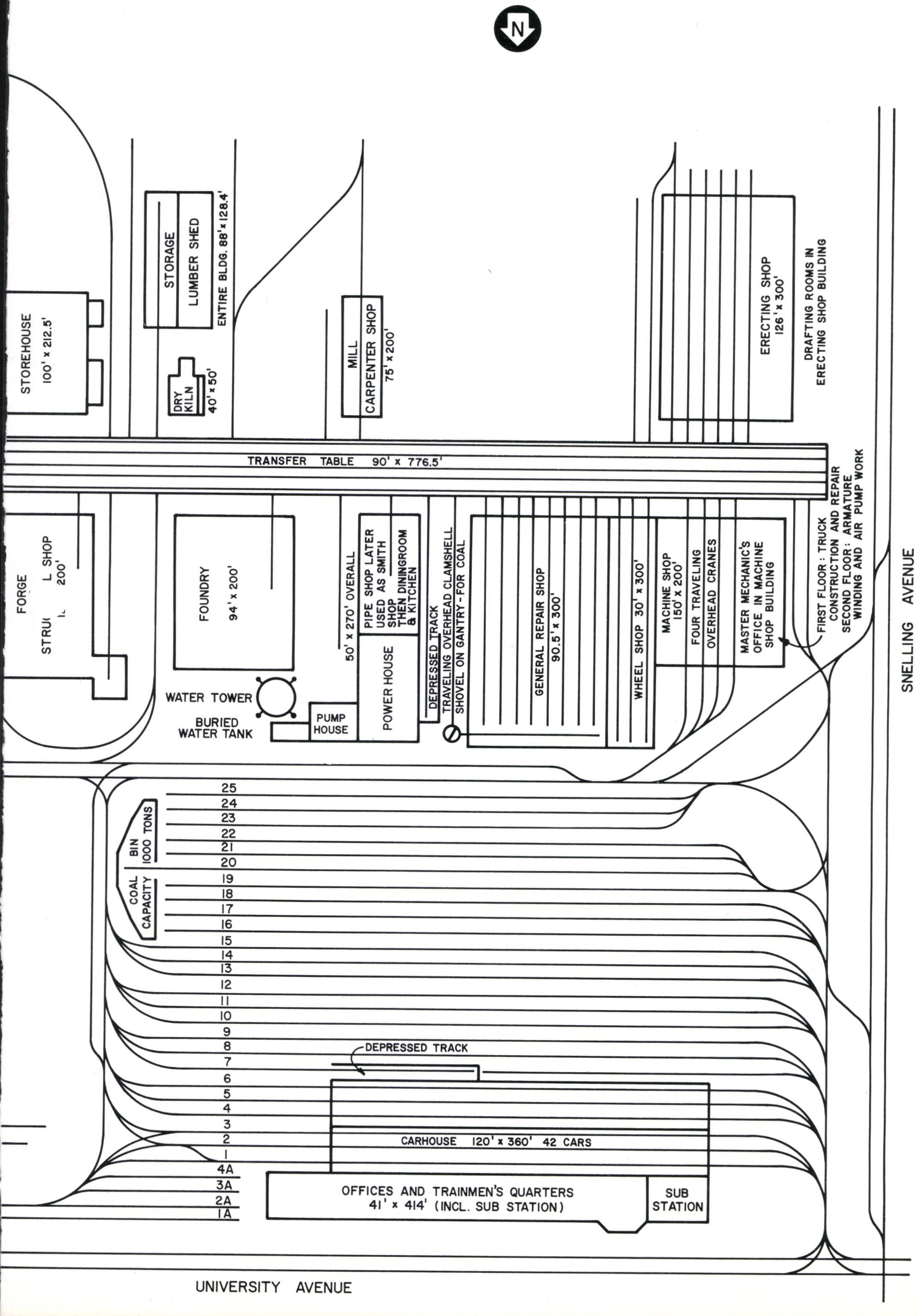
Above: A view of the Snelling Shop buildings north of the transfer table, taken about 1910-1911. (TCRT)

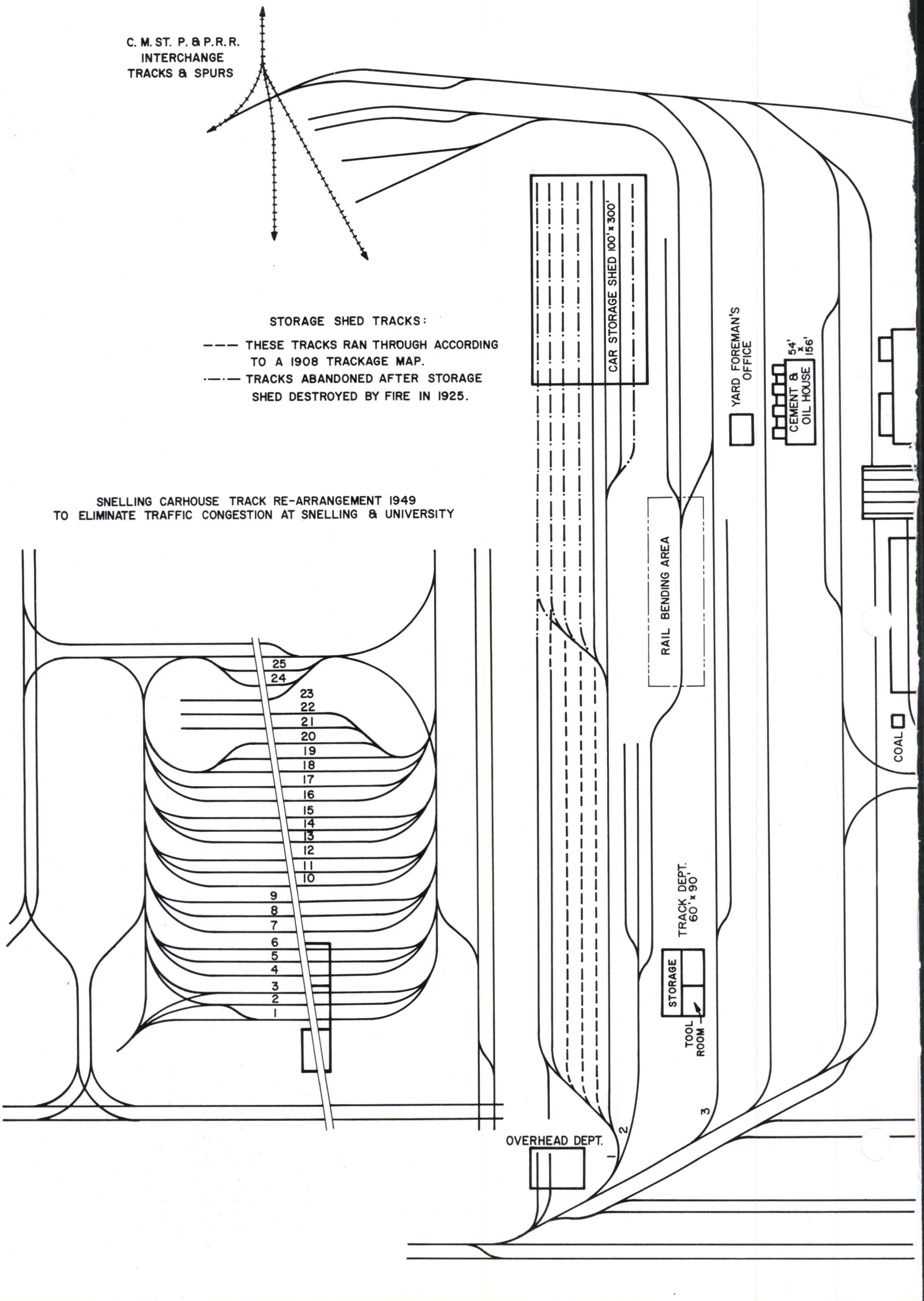
Below: Another view of the same area as it appeared about 1925-1926. (TCRT)



SNELLING SHOPS AND CARHOUSE

AUGUST, 1921


N
STOREHOUSE 100' x 212.5'
STORAGE
LUMBER SHED
ENTIRE BLDG. 88' x 128.4'
DRY KILN
40' x 50'
MILL
CARPENTER SHOP
75' x 200'
ERECTING SHOP 126' x 300'
DRAFTING ROOMS IN ERECTING SHOP BUILDING
TRANSFER TABLE 90' x 776.5'
FORGE
STRUC L SHOP
200'
FOUNDRY
94' x 200'
WATER TOWER
BURIED WATER TANK
PUMP HOUSE
50' x 270' OVERALL
PIPE SHOP LATER USED AS SMITH SHOP THEN DININGROOM & KITCHEN
POWER HOUSE
DEPRESSED TRACK
TRAVELING OVERHEAD CLAMSHELL SHOVEL ON GANTRY - FOR COAL
GENERAL REPAIR SHOP
90.5' x 300'
WHEEL SHOP 30' x 300'
MACHINE SHOP 150' x 200'
FOUR TRAVELING OVERHEAD CRANES
MASTER MECHANIC'S OFFICE IN MACHINE SHOP BUILDING
FIRST FLOOR: TRUCK CONSTRUCTION AND REPAIR
SECOND FLOOR: ARMATURE WINDING AND AIR PUMP WORK
SNELLING AVENUE
BIN 1000 TONS
COAL CAPACITY
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
4A
3A
2A
1A
DEPRESSED TRACK
CARHOUSE 120' x 360' 42 CARS
OFFICES AND TRAINMEN'S QUARTERS
41' x 414' (INCL. SUB STATION)
SUB STATION
UNIVERSITY AVENUE



STORAGE SHED TRACKS:

--- THESE TRACKS RAN THROUGH ACCORDING TO A 1908 TRACKAGE MAP.

-·-·- TRACKS ABANDONED AFTER STORAGE SHED DESTROYED BY FIRE IN 1925.

SNELLING CARHOUSE TRACK RE-ARRANGEMENT 1949
TO ELIMINATE TRAFFIC CONGESTION AT SNELLING & UNIVERSITY

C. M. ST. P. & P. R. R.
INTERCHANGE
TRACKS & SPURS
CAR STORAGE SHED 100' x 300'
YARD FOREMAN'S OFFICE
CEMENT & OIL HOUSE
54' x 156'
RAIL BENDING AREA
COAL
TRACK DEPT. 60' x 90'
STORAGE
TOOL ROOM
OVERHEAD DEPT.
2
3
25
24
23
22
21
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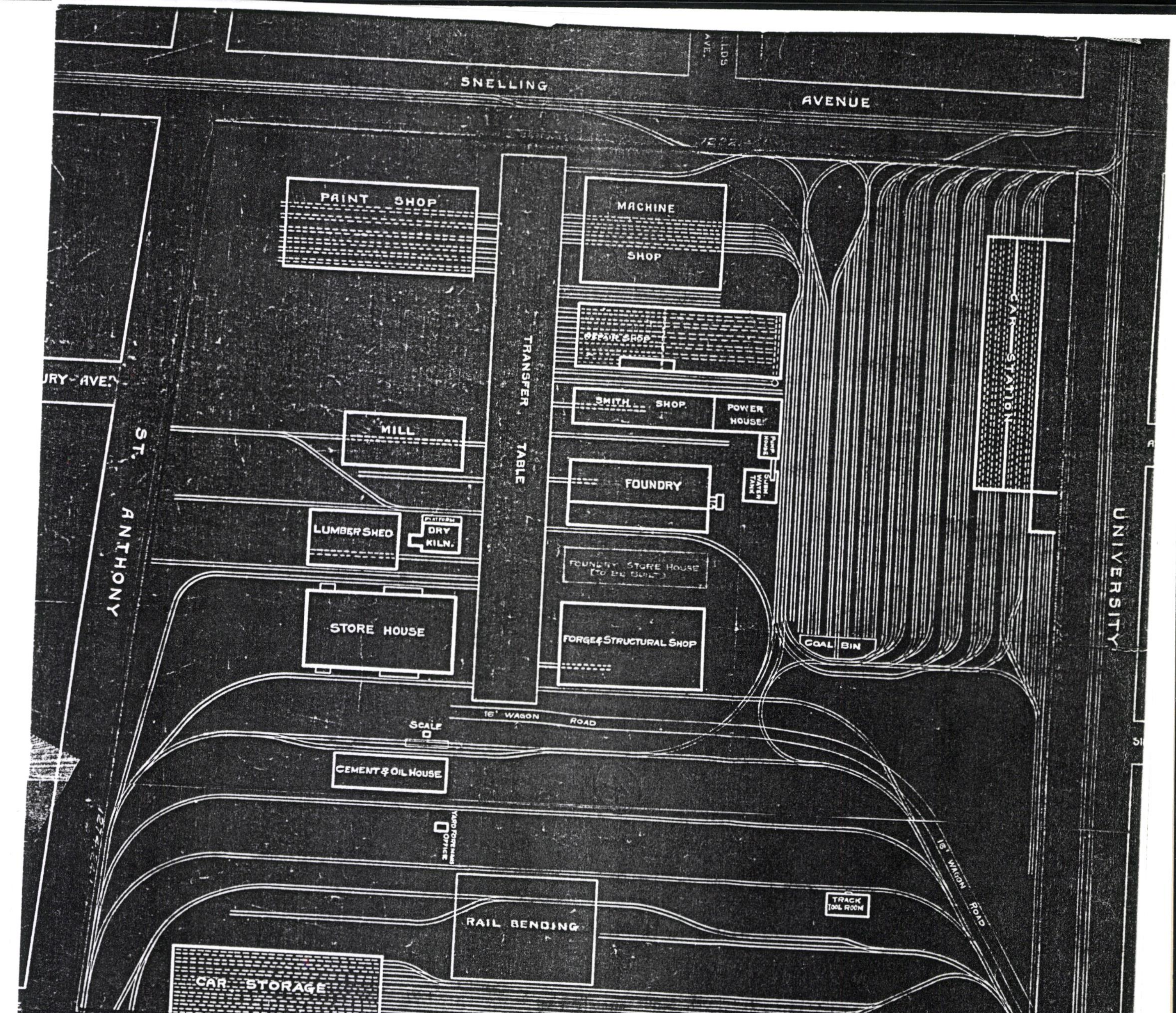

SNELLING AVENUE
PAINT SHOP
MACHINE SHOP
TRANSFER TABLE
REPAIR SHOP
SMITH SHOP
POWER HOUSE
PUMP HOUSE
SUBM. WATER TANK
MILL
FOUNDRY
LUMBER SHED
PLATFORM
DRY KILN
FOUNDRY STORE HOUSE (TO BE BUILT)
STORE HOUSE
FORGE & STRUCTURAL SHOP
COAL BIN
CAR STATION
UNIVERSITY AVENUE
ST. ANTHONY AVENUE
16' WAGON ROAD
SCALE
CEMENT & OIL HOUSE
YARD FOREMANS OFFICE
RAIL BENDING
TRACK TOOL ROOM
CAR STORAGE
OVERHEAD DPT. BLDG.
16' WAGON ROAD
3
2
1
19
27
17
18
EASEMENT FOR C.M.&ST.P.RY.CO. 12' WIDE TO NOV 9th 1911.
200'
BOHN BUILDING
FENCE
PATH
BOHN REFRIGERATOR CO.
SNELLING STATION

AVERY®
PV119ED

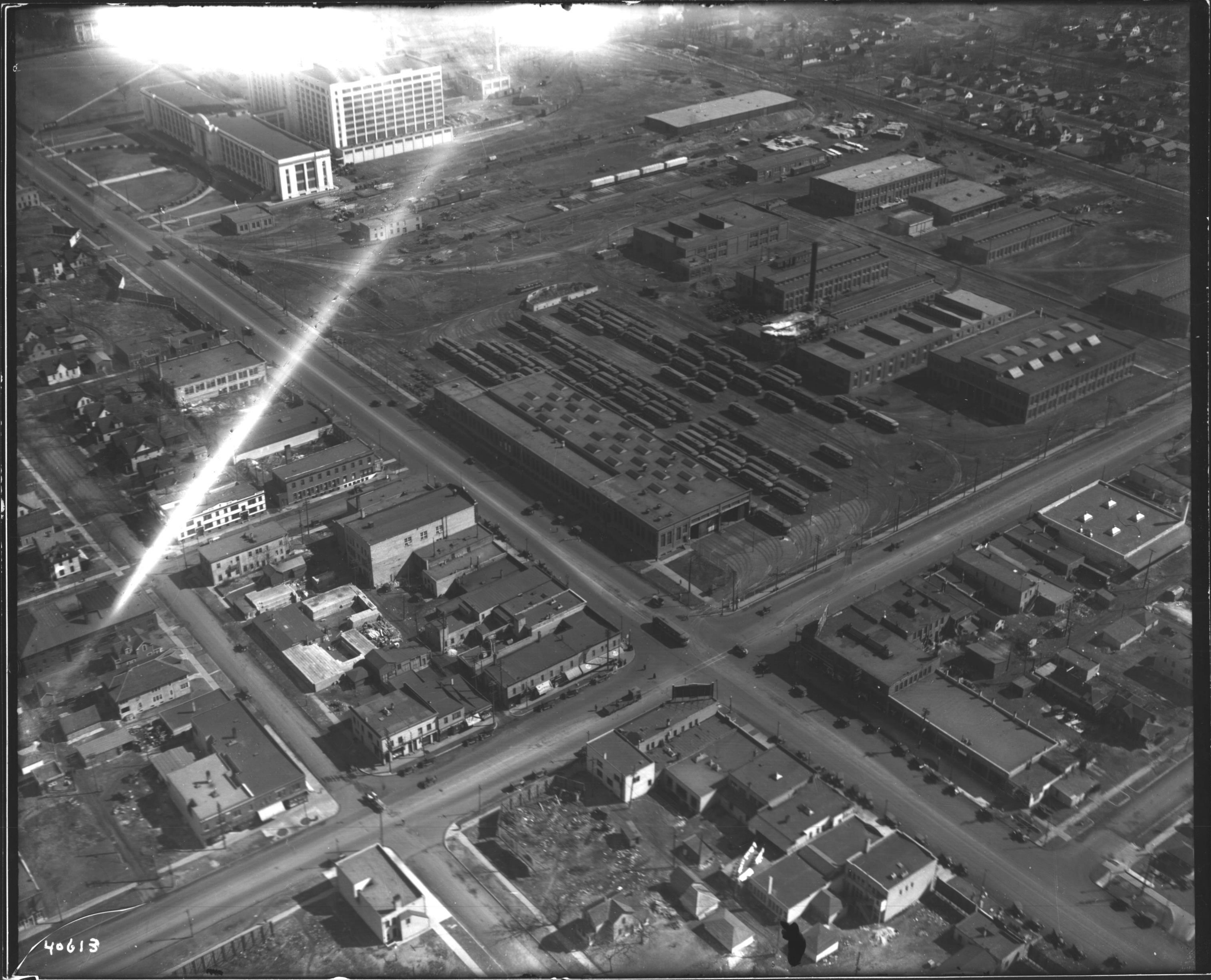
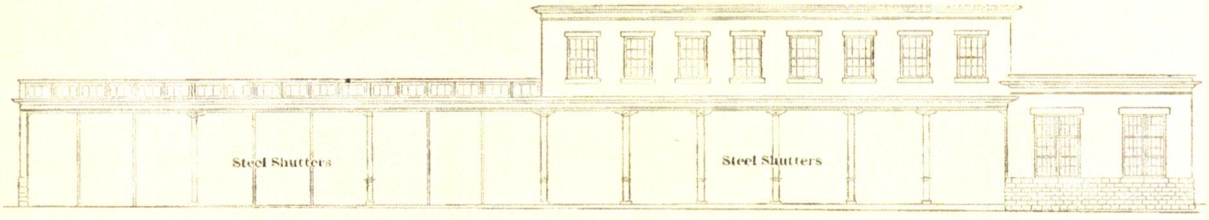


Photo Reproductions by Tufford
Garrie L. Tufford
51 Neptune Street
Mahtomedi, MN 55 15

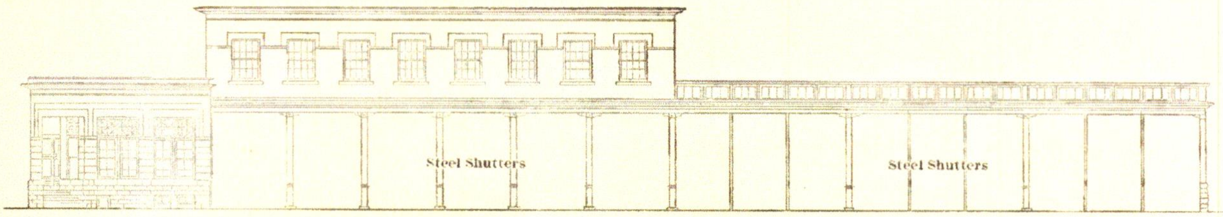
RUSSELL L. OLSON
8212 Sheridan Ave. So
Bloomington, Minn. 55431

NEW CAR HOUSE AND SHOPS FOR THE TWIN CITY RAPID TRANSIT COMPANY

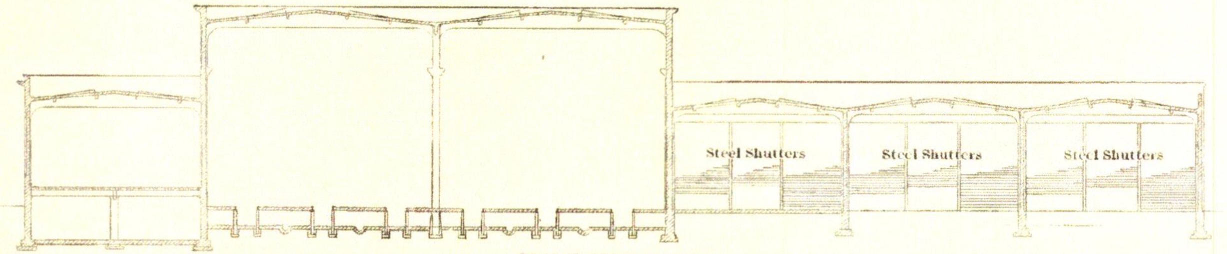
The Twin City Rapid Transit Company, which controls the street railway service of St. Paul and Minneapolis, is planning extensive additions to its facilities for handling rolling stock, and work will shortly commence upon a new car house in the Midway district between the two cities. During the last few years the business of the company has increased at a rate which has made necessary a notable enlargement of its physical plant, and the building of the new car house will be but a single step toward the construction of some of the most extensive car shops in the West. The company builds its own cars, having adopted a standard car 45 ft. 2 ins. in length, with four 40-hp motors per equipment, it needs all the modern facilities of a standard manufacturing plant, so that the layout of shops to be completed in the Midway district is being designed with all the care which would be given to the division mechanical headquarters of a large steam railway system.



REVISED REAR ELEVATION



REVISED FRONT ELEVATION



REVISED CROSS SECTION

Street Ry. Journal

FIG. 1.—CROSS-SECTION AND ELEVATIONS—SNELLING AVENUE CAR HOUSE—TWIN CITY RAPID TRANSIT COMPANY

At present the company's principal shops are located at Thirty-First Street and Nicollet Avenue, Minneapolis. While this point has the advantage of being located outside the business center of the city, it is not as convenient as the Midway location, which is not far from the geographical center of the entire transit system. Then, too, the Midway shops are to be built in a suburban section, and possess a strategic position in regard to the execution of quick repairs, as disabled cars will have a much shorter average run to the shops than the present Thirty-First Street quarters demand. Still another point of convenience comes from the location of the car house and shops directly on the line of the shortest and quickest interurban route between Minneapolis and St. Paul—the University Avenue line.

Fig. 2 shows the general layout of the new car house and shops, which will occupy a lot owned by the company on Snelling Avenue, St. Paul, between University and St. Anthony Avenues. The area of this lot is not far from 19 acres. Besides the car house, the plans of the company include the following building: A paint, varnishing and upholstering shop with an office, 300 ft. x 125 ft.; a coach shop, 300 ft. x 200 ft.; a mill, 150 ft. x 100 ft.; a dry kiln, 50 ft. x 40 ft.; a store room, 200 ft. x 100 ft.; a motor repair shop, 250 ft. x 90 ft.; a machine shop, 250 ft. x 60 ft.; a truck, frog and blacksmith shop, 150 ft. x 100 ft.; a foundry, 100 ft. x 75 ft.; an iron house, 75 ft. x 25 ft., and a coal house of the same dimensions. Power will be supplied by a plant 100 ft. x 100 ft.; oil will be stored in a fireproof building 40 ft. x 30 ft., and there will be a transfer table 605 ft. long x 90 ft. wide, extending through the center of the shop layout, so that cars may be handled with a maximum of convenience. The area occupied by the buildings will be about 4.8 acres, while the addition of the new car house, covering 3.2 acres, brings the total ground covered to 8 acres.

The design of the car house is a radical departure from existing practice through the use of reinforced concrete in practically every detail of construction. Foundations, pit floors, walls and roof will all be of this material. Fig. 3 shows the general plan of the car house, which occupies an area 550 ft. long x 266 ft. 7 ins. wide, slight modifications having been made

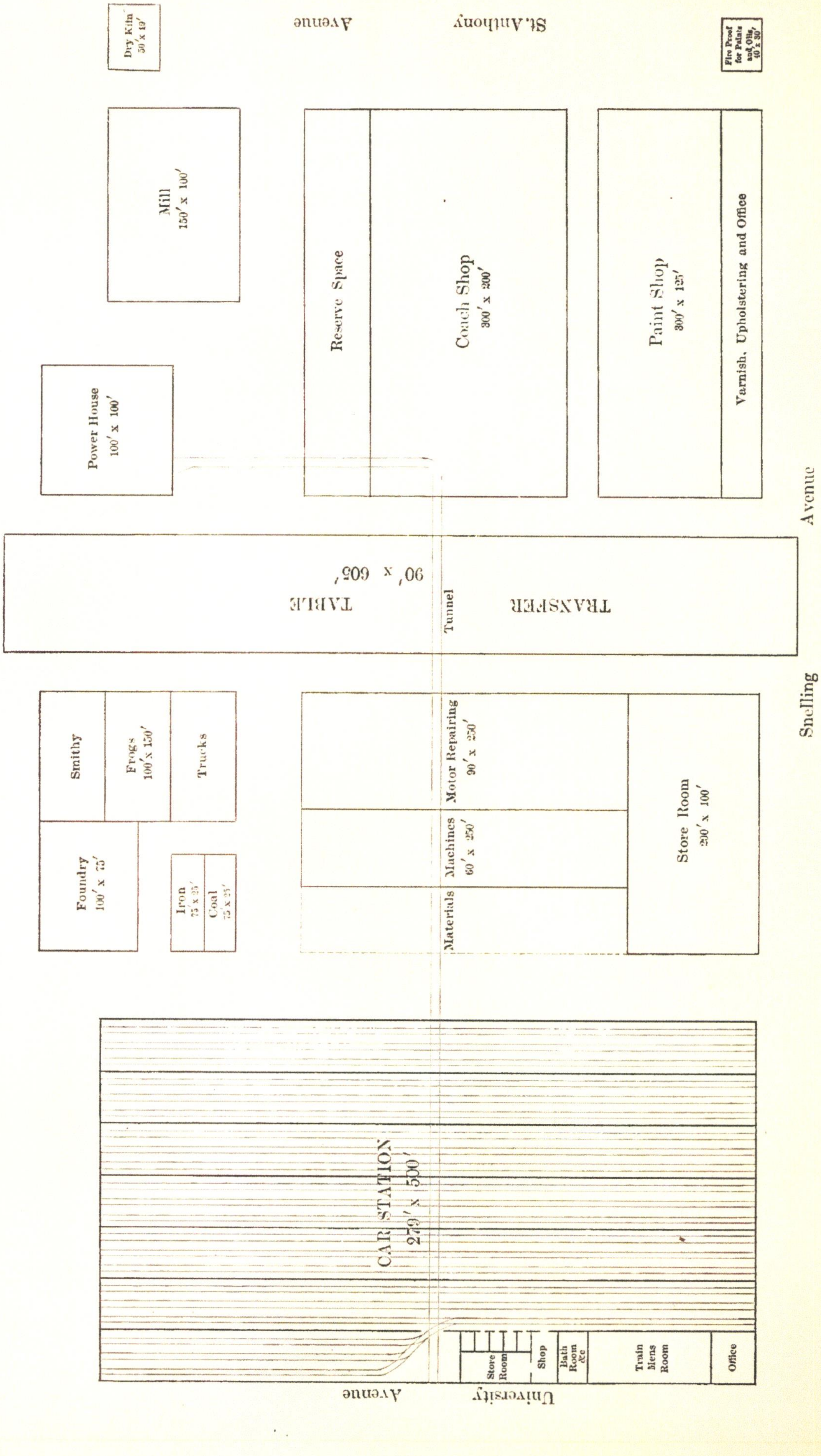

St. Anthony Avenue
Dry Kiln 30' x 19'
Fire Proof for Paints and Oils, 40' x 30'
Mill 150' x 100'
Reserve Space
Coach Shop 300' x 200'
Paint Shop 300' x 125'
Varnish, Upholstering and Office
Power House 100' x 100'
TRANSFER TABLE 90' x 605'
Tunnel
Snelling Avenue
Smithy
Frogs 100' x 150'
Trucks
Foundry 100' x 75'
Iron 75' x 35'
Coal 75' x 35'
Motor Repairing 90' x 250'
Machines 60' x 250'
Materials
Store Room 200' x 100'
CAR STATION 279' x 500'
Store Room
Shop
Bath Room &c
Train Mens Room
Office
University Avenue

FIG. 2.—LAYOUT FOR NEW SHOPS AT SNELLING AND UNIVERSITY AVENUES—TWIN CITY RAPID TRANSIT COMPANY

in the dimensions of Fig. 2. The capacity of the car house is 180 45-ft. cars, and its cost is estimated between $175,000 and $200,000. The building is to be one story in height, and will be divided into five essentially separate divisions. There are to be three car-storage halls, each about 520 ft. long x 39 ft. 9 ins. wide. Each of these halls is to be supplied with transverse steel shutters near its middle portion, so that six compartments may be easily placed in service as a precaution against fire. Each compartment will contain three parallel tracks running its entire length. Except at the ends, there will be no communication between the different compartments and the adjoining car shops save through a door in the middle, steel shuttered, 10 ft. wide and 8 ft. high. Dirt floors will be used in these compartments, except that there will be a cement floor 100 ft. long in one, for the purpose of washing cars. This floor will be pitched to drain the water used in car washing into the sewer connections of the car house. The tracks in the three compartments will be spaced 12 ft. apart on centers, and there will be two passageways 3 ft. wide each between the fireproof concrete wall, separating each compartment from its neighbor and from the pit room.

The pit room is to be 520 ft. long by about 104 ft. 10 ins. wide. It will contain six parallel tracks spaced 17 ft. apart on centers, each. The floor throughout will be of cement, as will the sides of the pits and the steps leading into them. This floor will be 7 ins. thick, reinforced by steel rods or other approved construction, and will be supported by round columns of cast iron 5 ins. in diameter. The pits will be 4 ft. 2 ins. deep, and will be drained to 4-in. x 8-in. gutters leading to the sewer connections. The foundations of the floor supporting columns will be of concrete in two courses, each 1 ft. deep and 2 ft. wide. Fig. 4 illustrates the pit room in cross section. An electric traveling crane will serve this room. Access can be had to the pits by four sets of parallel stairways, two of which are located at the center and one at each end of every pit. Three pathways, each 6 ft. wide, are provided for transit across the pit room. It has not been settled yet whether the crane runway will be supported on steel I-beams or reinforced concrete.

The entire length of the building

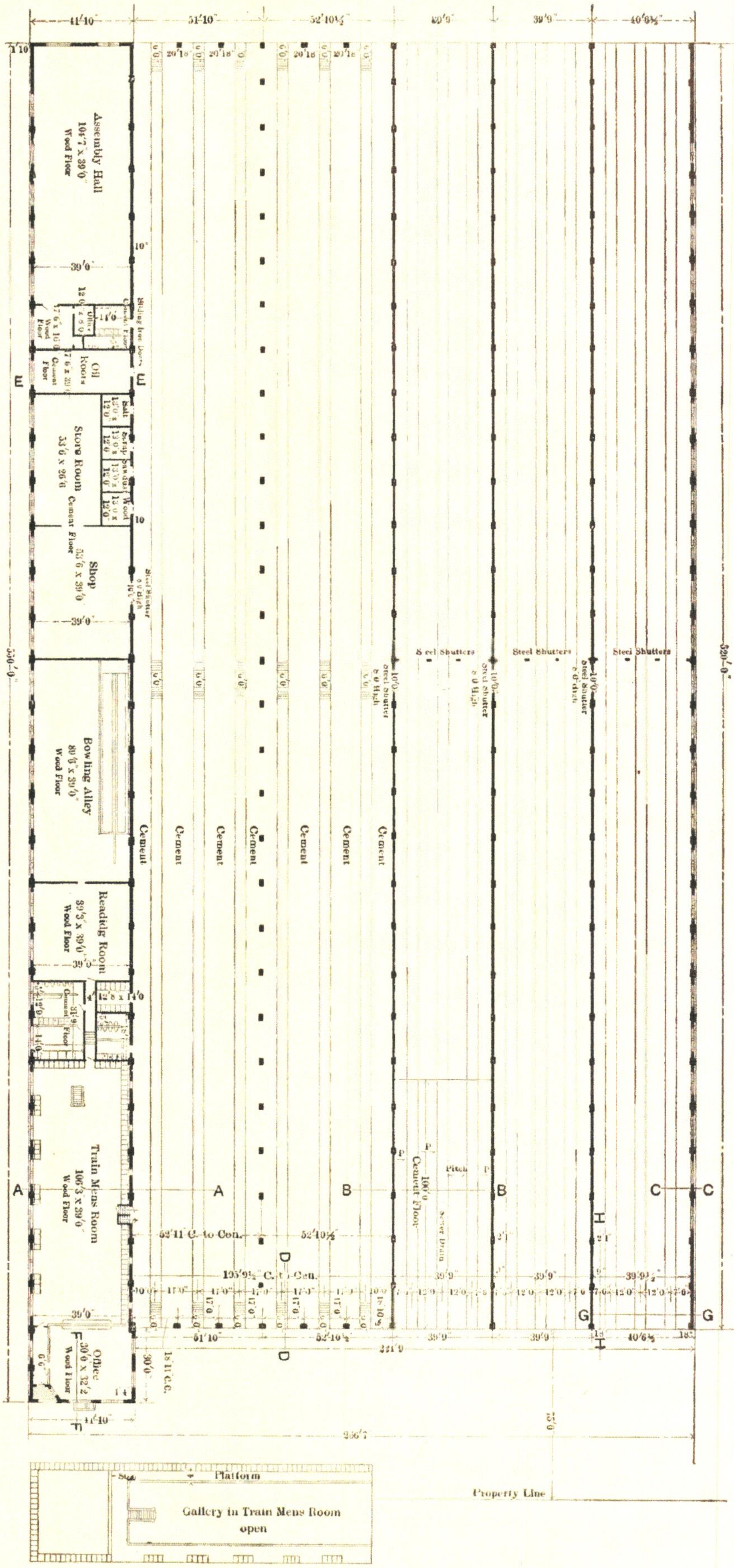
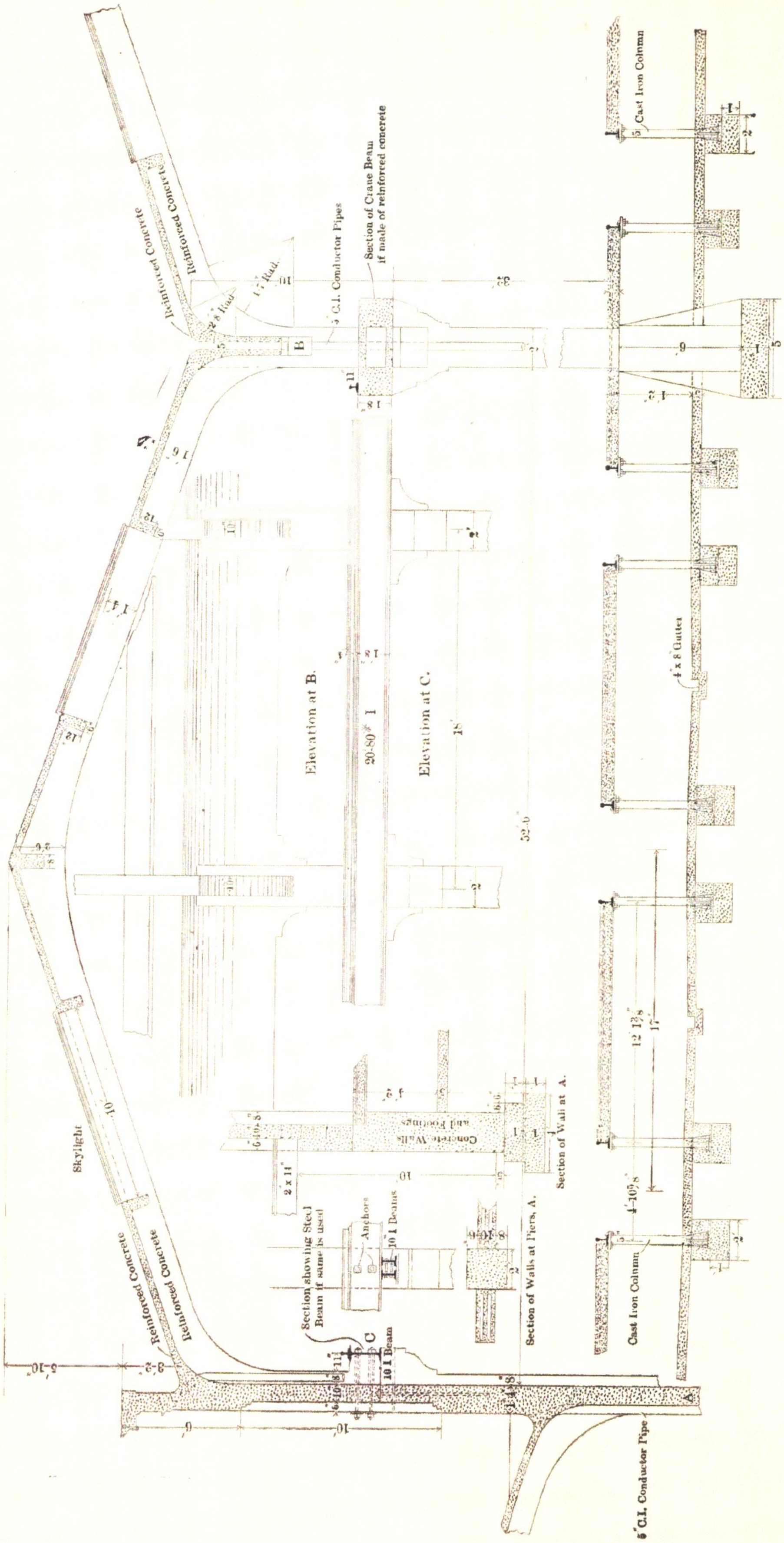

Assembly Hall
10'7 x 39'0
Wood Floor
Office
Oil Room
Store Room
33'6 x 26'6
Cement Floor
Shop
Bowling Alley
80'6 x 39'0
Wood Floor
Reading Room
Wood Floor
Train Mens Room
106'3 x 39'0
Wood Floor
Office
20'0 x 32'2
Wood Floor
Cement
Steel Shutters
Steel Shutter
Cement Floor
Pitch
Sewer Drain
A
B
C
D
E
F
G
H
41'10"
51'10"
52'10½"
39'9"
40'6½"
520'-0"
Platform
Gallery in Train Mens Room
open
Property Line

FIG. 3.—PLAN OF SNELLING AVENUE CAR HOUSE, TWIN CITY RAPID TRANSIT COMPANY


Reinforced Concrete
Reinforced Concrete
5" C.I. Conductor Pipes
Section of Crane Beam if made of reinforced concrete
B
Elevation at B.
20-80# I
Elevation at C.
32'-0"
Skylight
Reinforced Concrete
Reinforced Concrete
Section showing Steel Beam if same is used
Anchors
10 I Beams
C
10 I Beam
Concrete Walls and Footings
Section of Walls at Piers, A.
Section of Wall at A.
A
6" C.I. Conductor Pipe
5" Cast Iron Column
4" x 8" Gutter
Cast Iron Column

Section Through Working House

FIG. 4.—SECTIONS OF SNELLING AVENUE CAR HOUSE, TWIN CITY RAPID TRANSIT COMPANY

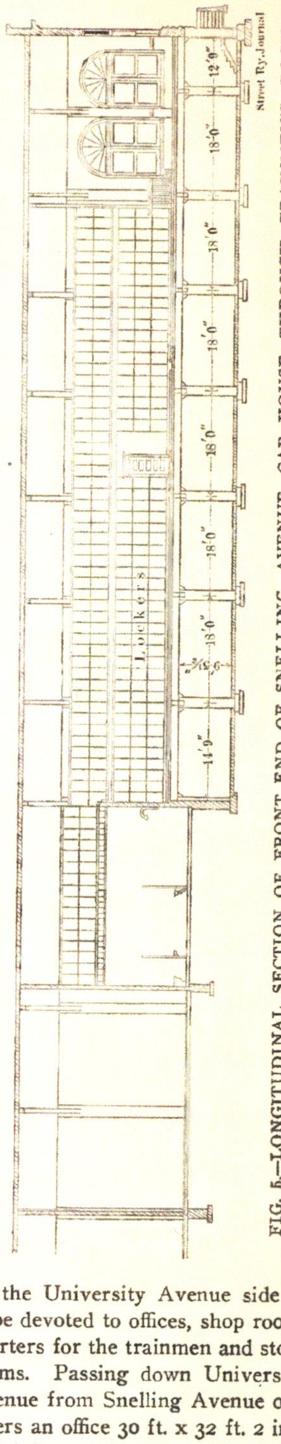

Lockers
14'-9"
18'-0"
18'-0"
18'-0"
18'-0"
18'-0"
18'-0"
12'-9"
Street Ry. Journal

FIG. 5.—LONGITUDINAL SECTION OF FRONT END OF SNELLING AVENUE CAR HOUSE THROUGH TRAINMEN'S ROOM—TWIN CITY RAPID TRANSIT COMPANY

on the University Avenue side is to be devoted to offices, shop room, quarters for the trainmen and store rooms. Passing down University Avenue from Snelling Avenue one enters an office 30 ft. x 32 ft. 2 ins. Adjoining this is a trainmen's room containing lockers, the room being 106 ft. 3 ins. long x 39 ft. wide. A stairway at the end of this room leads to a gallery above. Adjoining the trainmen's room is a hall 4 ft. wide, connecting with a wash and toilet room 31 ft. 9 ins. x 19 ft. 6 ins. A separate toilet and wash room is located on the other side of the hall for the exclusive use of the employees working in the Snelling Avenue half of the pit room. Next comes a reading room 39 ft. square, and after this a bowling alley 89 ft. 6 ins. long x 39 ft. wide, for the use of trainmen. Beyond the bowling alley comes a small shop 53 ft. 6 ins. x 39 ft., connecting with a store room 53 ft. 6 ins. x 26 ft. Four small rooms, each 13 ft. x 12 ft., are to be built between the store room and the pit room for the keeping of wood, sawdust, scrap and salt. The company's cars are heated by hot water, coal being used for fuel. The sawdust is used in sweeping out the cars. Next to the store room is an oil room 17 ft. 6 ins. x 39 ft. Then comes a toilet room for the employees in the east half of the pit room, this being built at this point to save the time of workmen, who would otherwise be obliged to walk more than half the length of the car house to the toilet room adjoining the trainmen's room. An office 8 ft. x 12 ft. and a waiting room 17 ft. x 16 ft. adjoin the oil room. The last part of the building is devoted to an assembly hall 104 ft. 7 ins. x 39 ft. for the use of employees. Here various meetings may be held, concerts, plays and other entertainments given, and it is expected that the room will find much use at the hands of the employees.

Power and light for the car house will be brought from the power plant through an underground passageway. The daylight illumination will be through skylights set in galvanized iron frames.

Fig. 1 shows two elevations and a longitudinal section of the car house. Below the office and the trainmen's room is to be a basement 9 ft. 5½ ins. deep, containing the coal supply for the hods carried on the cars. Temperatures of 25 degs. to 35 degs. below zero are not uncommon in the winter season of Minnesota, and the supply of coal to the company's cars presents a problem of considerable magnitude. Cars stopping on the University Avenue side can thus be readily supplied with fresh hods of fuel at the conclusion of each trip.

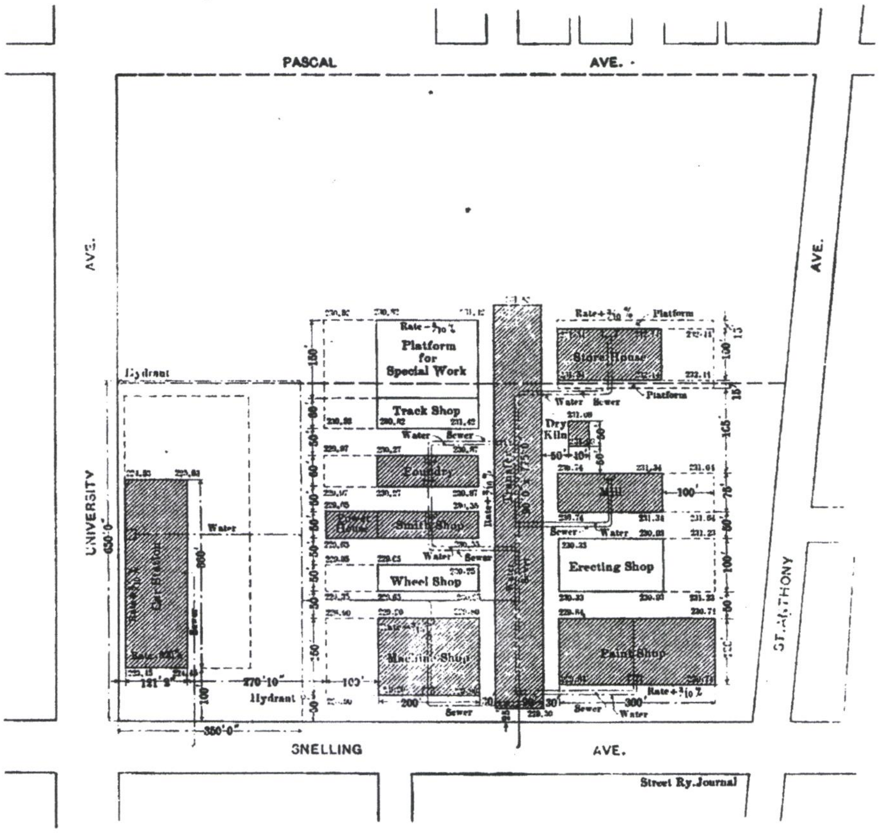
The roof trusses are all to be of reinforced concrete, as shown in Fig. 4. Special attention has been given to the drainage of the roof, and the problem of fire protection kept constantly in mind during the preparation of the plans by the company's architect, C. F. Ferrin. The writer's acknowledgements are due to Mr. Ferrin and to Willard J. Hield, general manager of the Twin City Rapid Transit Company, for courtesies extended in the preparation of these notes.

◆

7-21-1906

THE NEW SHOPS OF THE TWIN CITY RAPID TRANSIT COMPANY

The Twin City Rapid Transit Company, of Minneapolis and St. Paul, has begun the erection of new shops for the maintenance of all the equipment operated in the two cities and on the surrounding interurban lines. Construction work is already well under way. The car station is almost completed, and the foundations for practically all of the buildings are in place. It is expected that they will be ready for occupancy in the fall. The shops are being built on a site about midway between the two cities and cornering on University and Snelling Avenues. The buildings are to be of concrete steel construction. The walls will be faced with cement brick, backed by cement blocks. The blocks and brick are being manufactured by the company on the site of the shops.



LAYOUT OF PROPOSED SHOPS FOR THE TWIN CITY RAPID TRANSIT COMPANY

The accompanying drawing shows the relative arrangement of the buildings. Those cross hatched are to be erected at once. The machine shop, foundry and mill will be built with a view to enlarging them at some future time by extending them 100 ft., as shown by the dashed lines. As a precaution against the spreading of fire, a 50-ft. space is allowed between the separate buildings, and the car station will be provided with automatic sprinklers.

The machine shop will be built with a central bay and wings on either side. Four tracks will run through the center and will be served by two 25-ton cranes spanning the central bay. Galleries will be built in the wings. The lighter machine tools will be installed in these, while the heavier machinery will be located on the main floor underneath, which will be of wood laid on concrete. A wheel shop will eventually be built adjacent to the machine shop. For the present, however, the wheel work will be done in the machine shop. The paint shop will be provided with cranes, and a fireproof room will be built for the storage of paints.

Power for the shops will be supplied at 220 volts from the Snelling Avenue sub-station, located in the front portion of the car station. This sub-station is one of the several supplying current for operating the cars, but a motor-generator set will be installed to care for the shop load. About 300 hp of motors will be employed. The shops will be lighted by both incandescent and multiple-arc lights. All the buildings will be heated by steam from a central plant in the rear of the smith shop.

The dry kiln will be heated by hot air, obtained by means of fans which will drive air over steam pipes. Water will be secured from the city mains. A sewage system connected to all the buildings will empty into the city sewer on Snelling Avenue. All of the buildings will be supplied with ample toilet facilities. The shops are being built for a capacity of about 50 per cent greater than the present shops at Blaisdell Avenue and Thirty-first Street, Minneapolis. However, a 20-acre tract, belonging to the company, east of the site now being covered with buildings, will permit future extensions should these be needed at any time. The construction work is under the supervision of C. F. Ferrin, superintendent of buildings for the company.

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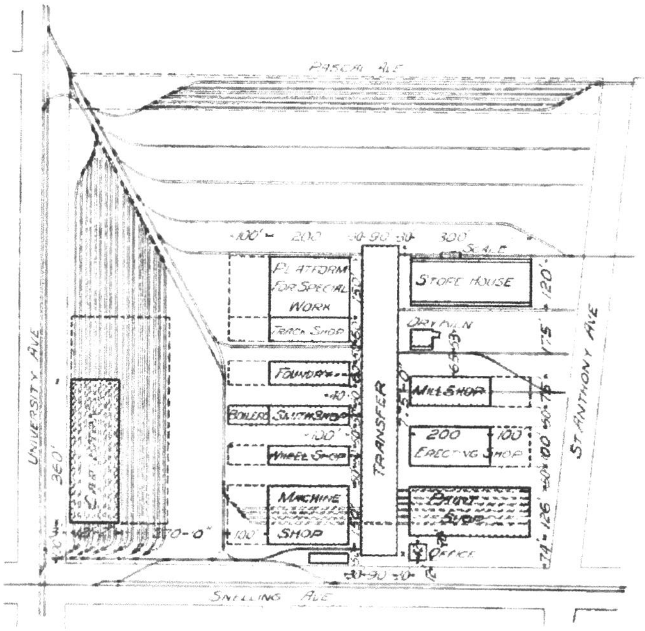
NEW CONCRETE SHOPS OF THE TWIN CITY RAPID TRANSIT COMPANY.

About half way between Minneapolis and St. Paul are the new shop buildings of the Twin City Rapid Transit Company. This location is central for the present lines and future extensions as now planned. One corner of the 40-acre plot of ground on which the shops are built is at the intersection of the University avenue line, between the Twin Cities and the Snelling avenue north and south line, which latter line intersects all the east and west lines connecting Minneapolis and St. Paul. As shown on an accompanying plan, in which the structures now completed are indicated by shading, the group of new shop buildings includes the following departments: Machine shop, wheel shop, boiler house, blacksmith shop, foundry, track shop, paint shop, erecting shop, mill shop, dry kiln, storehouse and office. In addition to these shop buildings is an operating barn containing accommodations for employes and facilities for light repairs.

Method of Handling Repair Work.

Before describing the buildings in detail it may be of interest to outline the method to be used in handling car repairs when the new shop equipment is complete. A cross section through the car house will show the track facilities afforded for making the first inspection of cars as they are brought in from the runs. Each bay of the inspection section will be provided with a power crane for lifting car bodies.

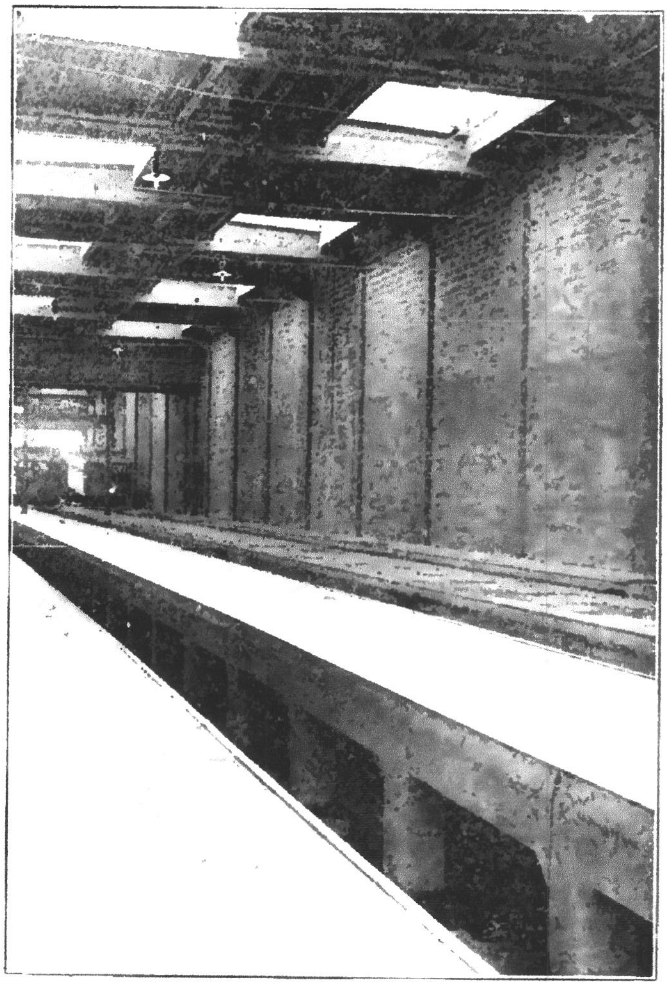


Twin City Shops—Location of Buildings and Tracks.

When cars are brought in for inspection or repairs they will be taken through the car house first, and if the trouble is found in a truck, that defective truck will be run out from under the car body and a truck in good repair immediately put in its place, so that the rest of the equipment may be idle for the shortest possible time. To provide for this method of truck replacement the Rapid Transit company maintains one extra set of trucks for each 25 cars. It is expected that in this manner from 25 to 30 cars in damaged condition can be returned to the line for operation each day. If for any cause the capacity of the truck-replacing facilities at the new shops is overcrowded, extra trucks in operating condition can be sent to the other modern car station which the company maintains and which is equipped with a body crane.

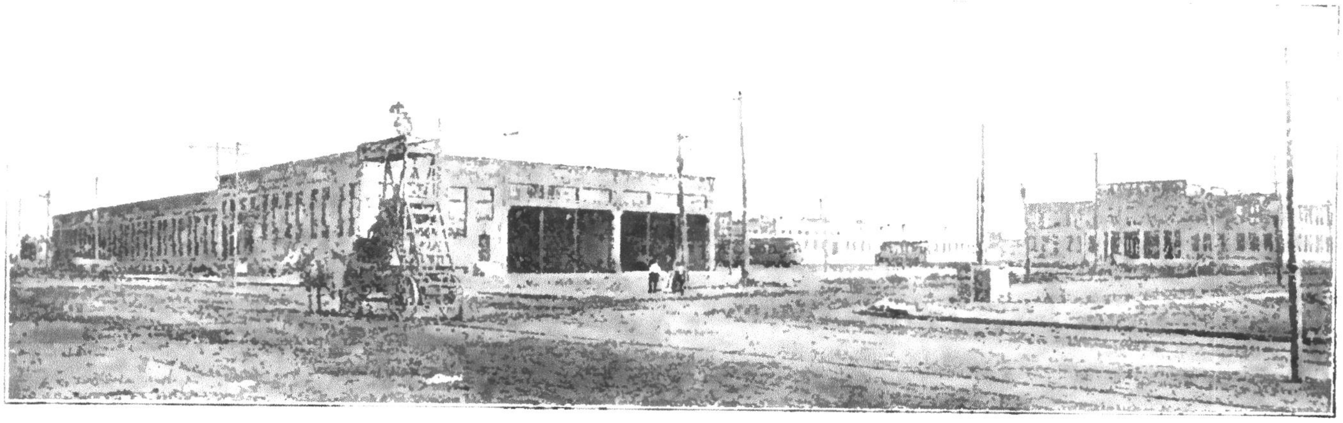
One half of the cars to be maintained at this barn will be trippers, which, after doing service during the day, will be set on the sidetracks in the yard, so that they can be inspected in the barn during the next night. The cars that are used as trippers during one week are placed on regular runs for the following week and the two halves of the equipment thus alternated in service, so that there may be no average difference in the character of the inspection, which is given them. Inspection crews of the same size are maintained at night and during the day and therefore the number of car bodies required for a given service is maintained as low as possible. The yards surrounding the barn are laid out for 17 storage tracks to accommodate 16 cars each.

Concrete Structures.

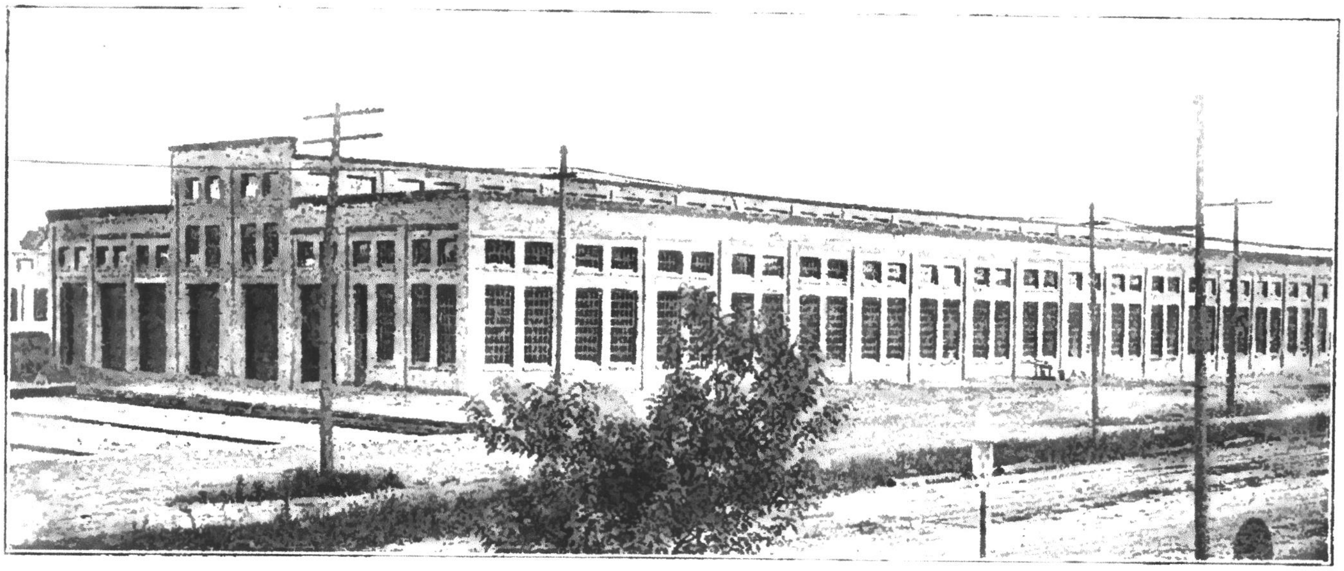


Twin City Shops—Interior of One Bay in the Car House.

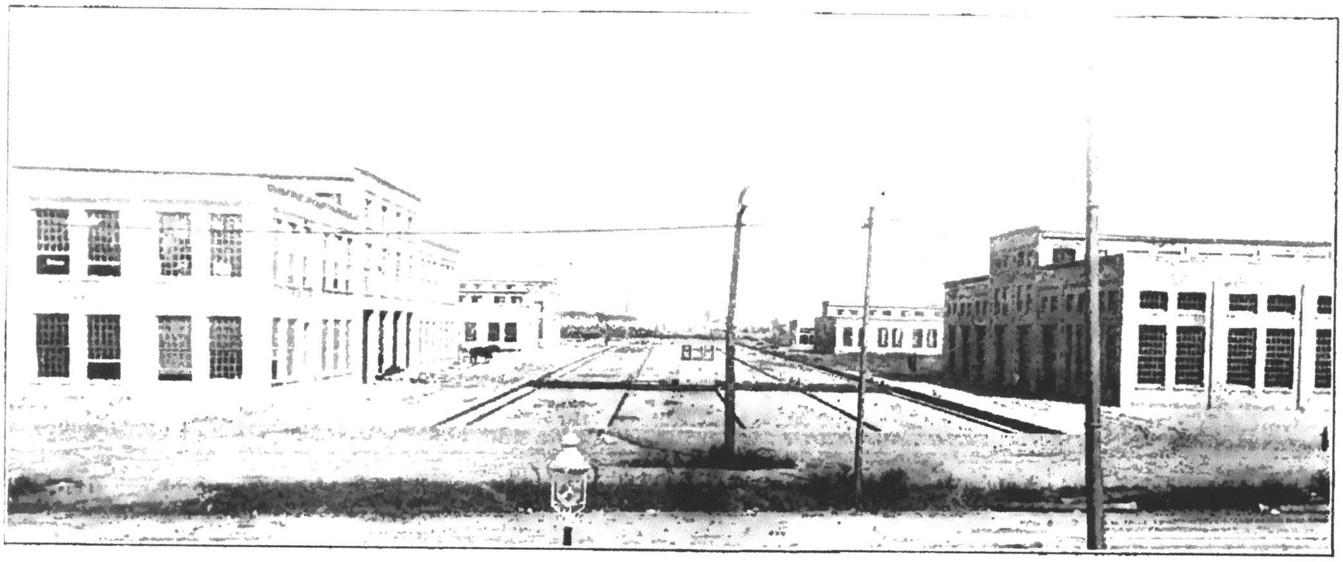
Accompanying halftone views illustrate the especially attractive appearance of the new shop buildings, all of which are concrete structures. Work on these buildings began more than a year ago, but preliminary to the erection period proper it was necessary to make 85,000 yards of excavation. A scarcity of labor delayed the expected earlier completion of the structures. The foundations, which are of monolithic concrete construction, vary in thickness from 18 to 22 inches, according to the size of the buildings. The interior walls of the buildings are built of hollow concrete blocks 2 feet long, 9 inches thick and $7\frac{3}{4}$ inches high. The outer side of these walls is veneered with concrete brick of standard size, giving the building walls a total thickness of 13 inches. The concrete mixture used in the large blocks comprised 1 part Owl cement to $4\frac{1}{2}$ parts sand. Each block was made under a pressure of 100 tons on a Perfection block machine manufactured by the Dow Perfection Cement Block Company, Sioux Falls, S. D. The output of the machines is stated as 60 blocks per hour each, but during the construction of these shops as many



Twin City Shops—View Showing Car House at the Left, Blacksmith Shop in the Center and Machine Shop at the Right.



Twin City Shops—Exterior of Paint Shop Building.

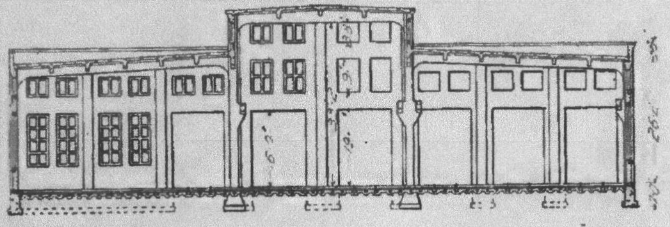


Twin City Shops—View Showing Buildings Facing Transfer Table.

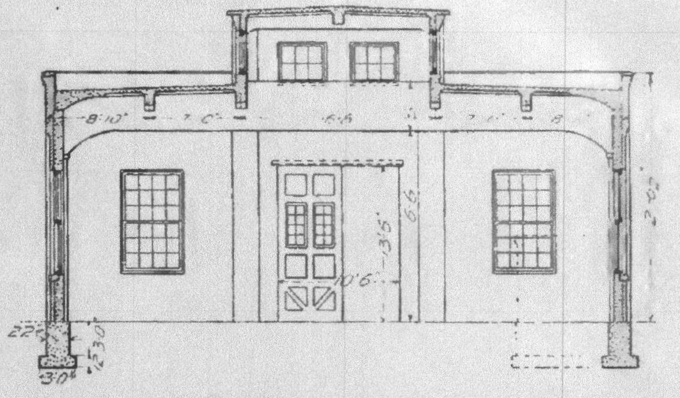
800 blocks per day were cast on one machine. The blocks are said not to crush until a load of 167,200 pounds is applied.

The cement bricks were molded from a mixture of 1 part cement to 3½ parts sand and were manufactured at the rate of 15,000 per day by five machines made by the Peerless Brick Machine Company of Minneapolis. It required two barrels of cement and 1¼ yards of sand to make 1,000 bricks.

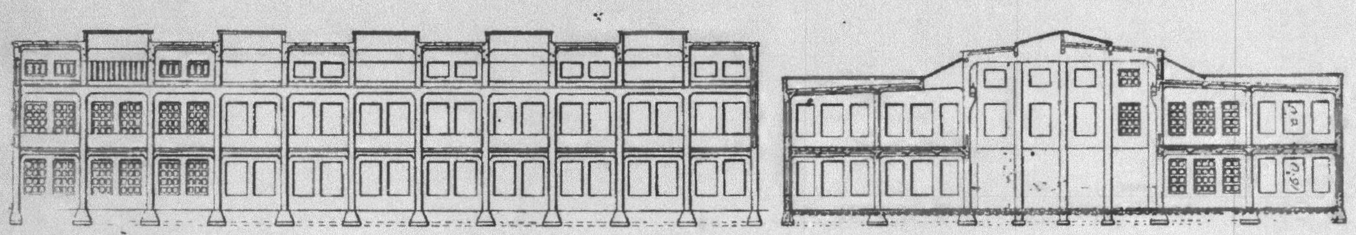
Other than the floors, roofs and walls, all of concrete, the girders used are of especial interest. These girders support the roof and floors and span the trackways running into the building wherever unobstructed space is required. One type of girder is 58 feet long, reinforced with seven plain steel rods 1½ inches in diameter. Other types of girders vary in length from 50 feet down. Some of the girders are carried on monolithic plasters, reinforced with plain rods, and others on pilasters built up of concrete brick.



Twin City Shops—Cross Section of Paint Shop.

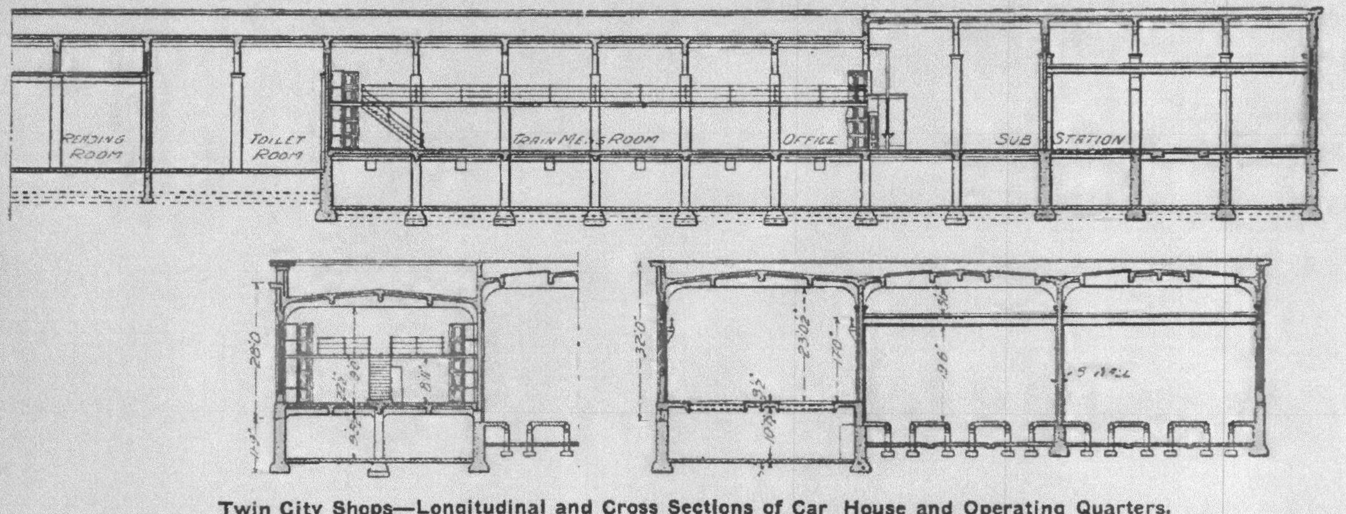


Twin City Shops—Cross Section of Blacksmith Shop.



Twin City Shops—Sections of Machine Shop, Showing Balcony.

In these new shop buildings concrete was used wherever possible. Rolling steel doors form fireproof barriers between the departments and also at the outside entrances. These were manufactured by the Kinnear Manufacturing Company, Columbus, O.



Twin City Shops—Longitudinal and Cross Sections of Car House and Operating Quarters.

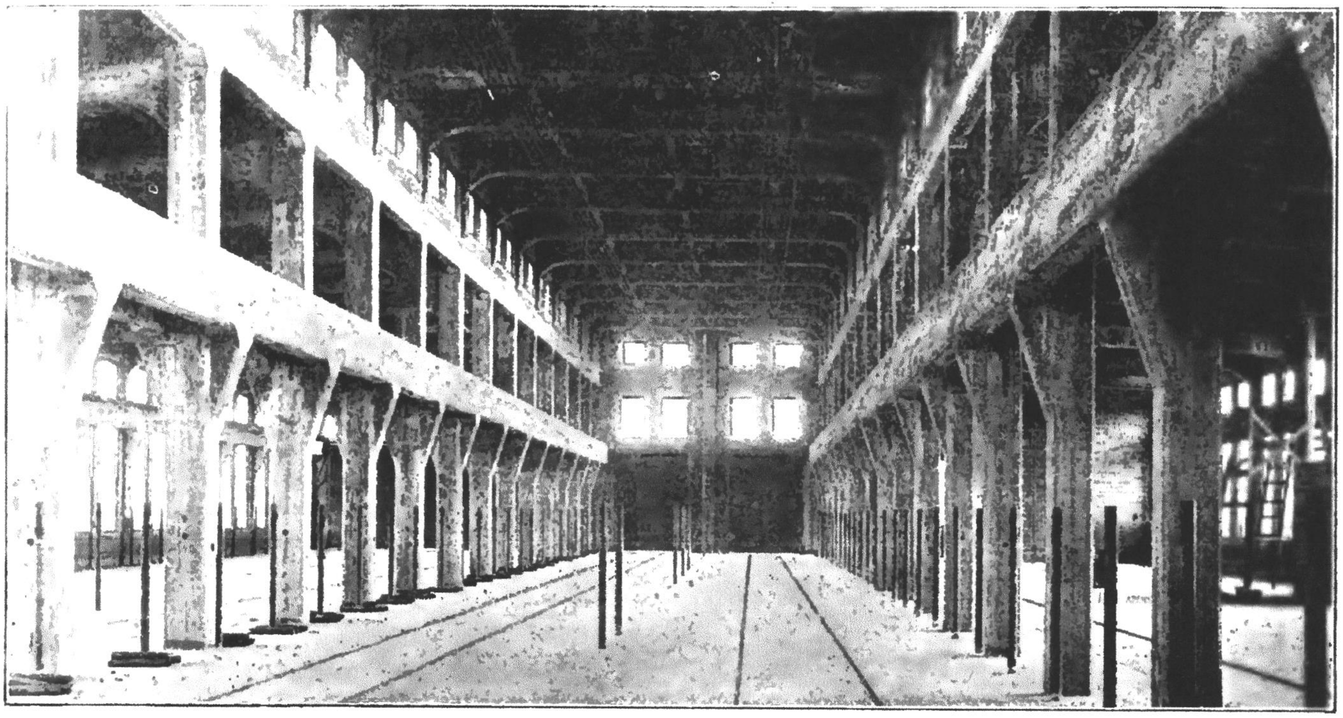
All floors are of concrete. The roofs are 4-inch slabs of concrete reinforced with 7-11 steel wire fabric and mild steel bars. This fabric was supplied by the American Wire Fence Company, Chicago. The roofs are given a waterproof covering of pitch and gravel.

Reference to the plan showing the layout of the buildings will indicate the position of the transfer table, on either side of which are the shop buildings proper. The pit for the transfer table is 775 feet long by 90 feet wide, with the concrete retaining walls on either side supporting the running rails. With the transfer table, 90 feet long, there is a length of track available for handling at one time two standard city cars or one 70-foot interurban car with a pusher.

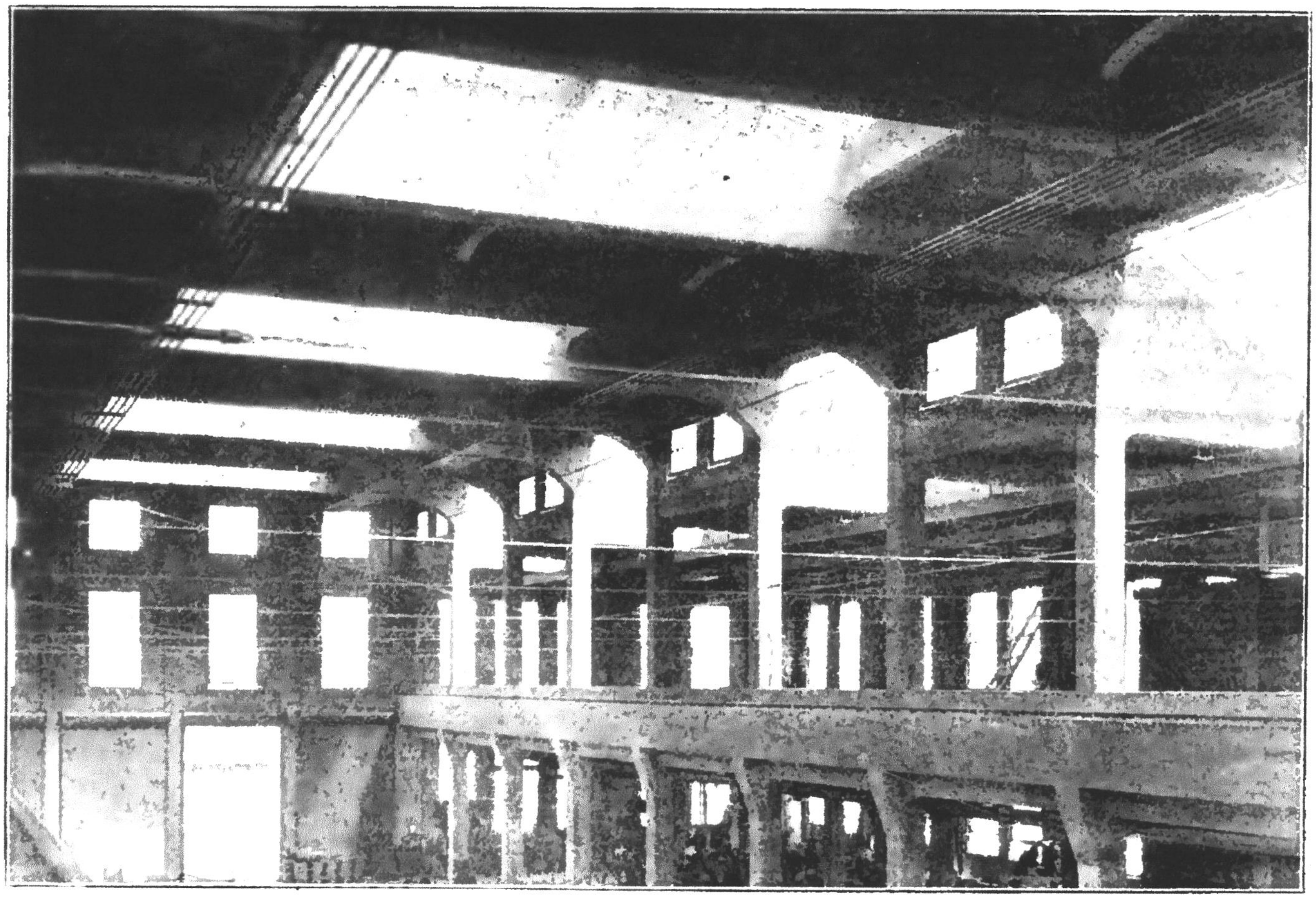
Machine Shop.

The machine shop has floor dimensions of 150 by 200 feet. It comprises a main center bay, with four tracks extending through it and a craneway above, with two additional 2-story bays on either side, as indicated in the illustration. The type of roof construction, with large skylights and the large number of side and end windows, affords what is probably as plentiful illumination as can be found in any railway shop.

The ground floor of the entire shop building will be utilized for a machine shop in which trucks can be taken in at

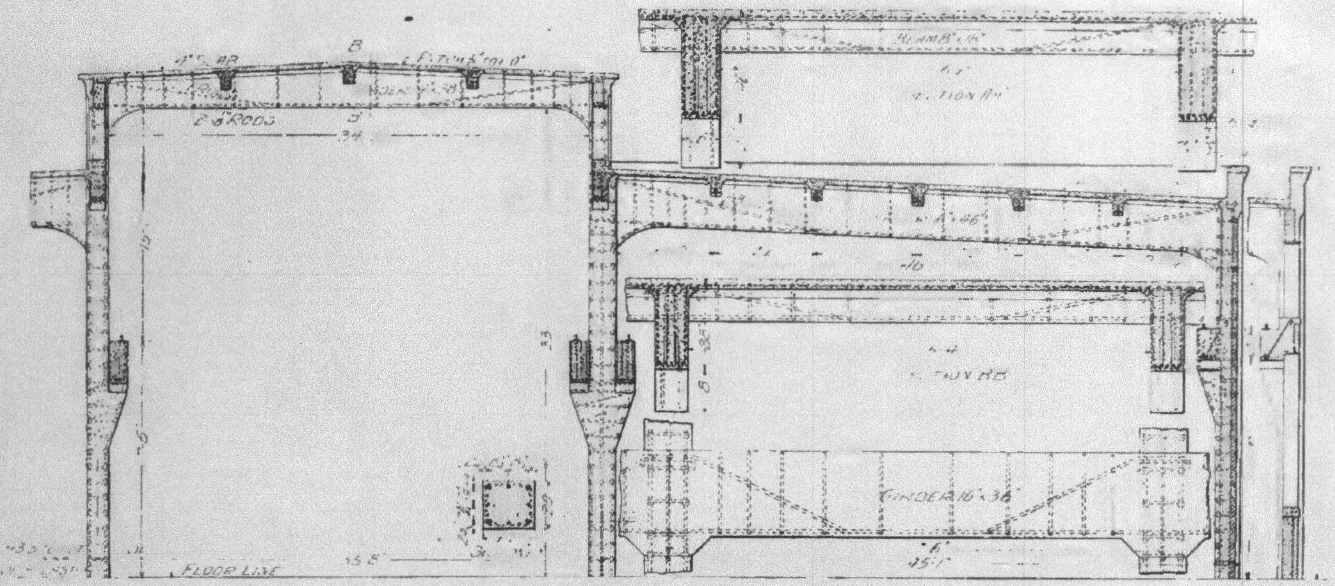


Twin City Shops—Interior of Paint Shop Building, Showing Balconies and Posts for Supporting Painters' Scaffolding.

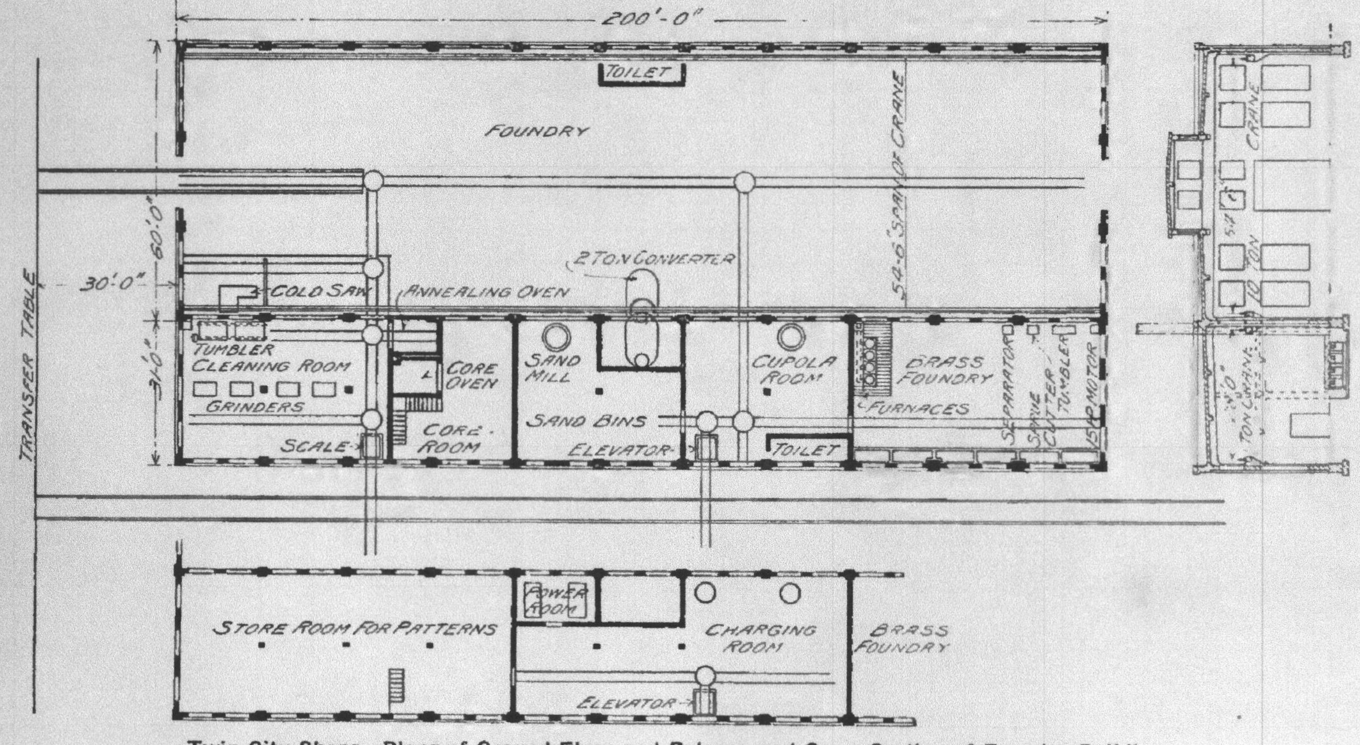


Twin City Shops—Interior of Machine Shop During Erection of Machinery, Showing Balcony Floor and Abundant Lighting Facilities.

one end, overhauled and repaired, and taken out at the other end for operation under car bodies repaired or built in other of the shop buildings. The four tracks pass through the center bay and connect with the transfer table at one end and the yard tracks at the other. There are no pits in this shop. Seventy-five per cent of the Twin City company's railway motors are built for top inspection and those built for pit inspection when damaged will be removed from the trucks for repairing and new ones sent out in their place while thorough repairs are being made to the damaged parts. All the trucks for the entire system will be repaired in this shop and when needed delivered to other stations in trains.


FLOOR LINE
GIRDER 16" x 36"

Twin City Shops—Partial Section Through Paint Shop, Showing Details of Concrete Reinforcement.


200'-0"
TOILET
FOUNDRY
54'-6" SPAN OF CRANE
60'-0"
30'-0"
31'-0"
TRANSFER TABLE
2 TON CONVERTER
COLD SAW
ANNEALING OVEN
TUMBLER
CLEANING ROOM
GRINDERS
SCALE
CORE OVEN
CORE ROOM
SAND MILL
SAND BINS
ELEVATOR
CUPOLA ROOM
TOILET
BRASS FOUNDRY
FURNACES
SEPARATOR
SPRUE CUTTER
TUMBLER
15 HP MOTOR
STORE ROOM FOR PATTERNS
POWER ROOM
CHARGING ROOM
BRASS FOUNDRY
ELEVATOR
10 TON CRANE
10 TON CRANE

Twin City Shops—Plans of Ground Floor and Balcony and Cross Section of Foundry Building.

The center bay of the machine shop will have three traveling bridges, each with four lifts of 12,000 pounds capacity each. These cranes, built by the Modern Steel Structural Company, Waukesha, Wis., will be electrically operated. It is noted that they will serve only the central bay, which has the four tracks leading through it. Under each of the four side bays, and supported from the ceiling of the first floor by 10-inch I-beams, are two 4,000 pounds capacity electric traveling cranes, with hoists built by the General Pneumatic Tool Company, Montour Falls, N. Y. These travelers have a span of about twenty-five feet each and a run of 200 feet, the length of the shop. This crane equipment will serve all the machine tools in the entire first floor of the shop and should the present number of cranes and hoists prove inadequate, preparation has been made so that others can be installed.

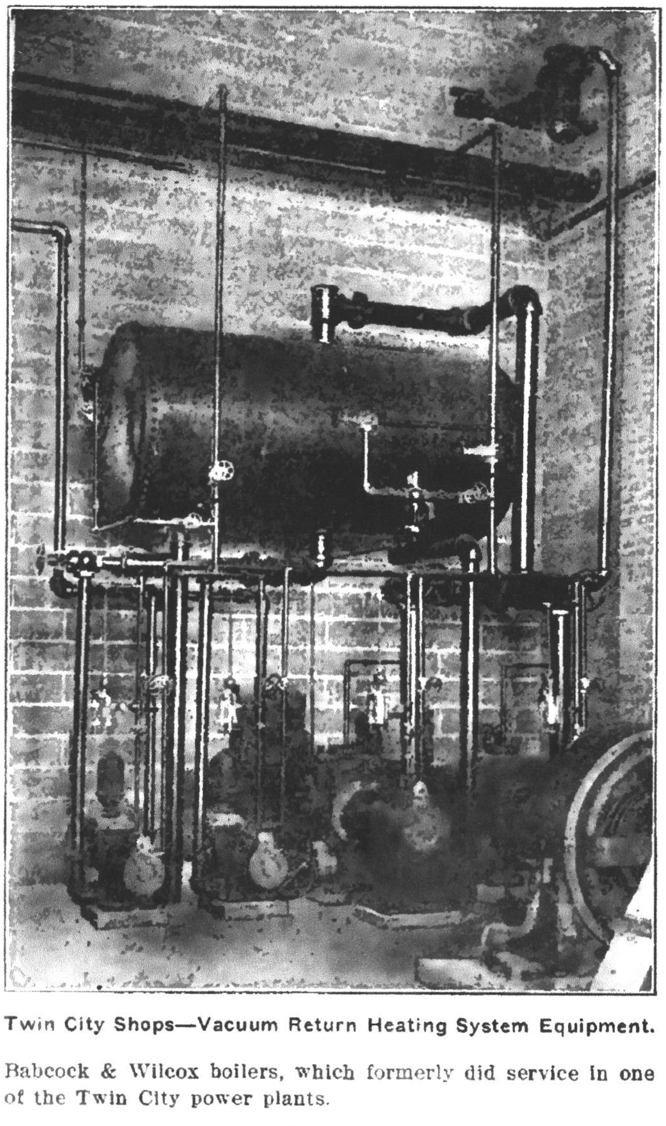
The second floor of the side bays will be utilized for armature winding, air compressor repairs and electrical work. Elevator equipment will be provided, so that when an armature is taken out of a truck being repaired on the floor of the center bay, it need be transported but 100 feet to the place where it will be repaired.

Blacksmith and Wheel Shops.

In the proposed wheel shop, which will stand between the machine and blacksmith shops, as shown on the ground plan of the shop layout, it is planned to do all the axle, gear and wheel work. Facilities will be afforded for handling the heavy pieces, so that when a carload of wheels is received it can be unloaded quickly and the car can be reloaded and sent away with a cargo of old wheels.

The forge shop and the boiler plant are housed in one building, with a concrete fire wall separating it into two rooms. An accompanying illustration is a cross section of the blacksmith shop, which is similar in construction to the wheel shop earlier mentioned. A very complete equipment of Buffalo down-draft forges is being installed in connection with a blowing plant in the adjacent boiler room. The blower outfit comprises a 60-inch Buffalo Forge Company exhaust fan and a No. 10 blower, belt-driven by a 35-horsepower General Electric motor. An illustration of this group of machines is presented.

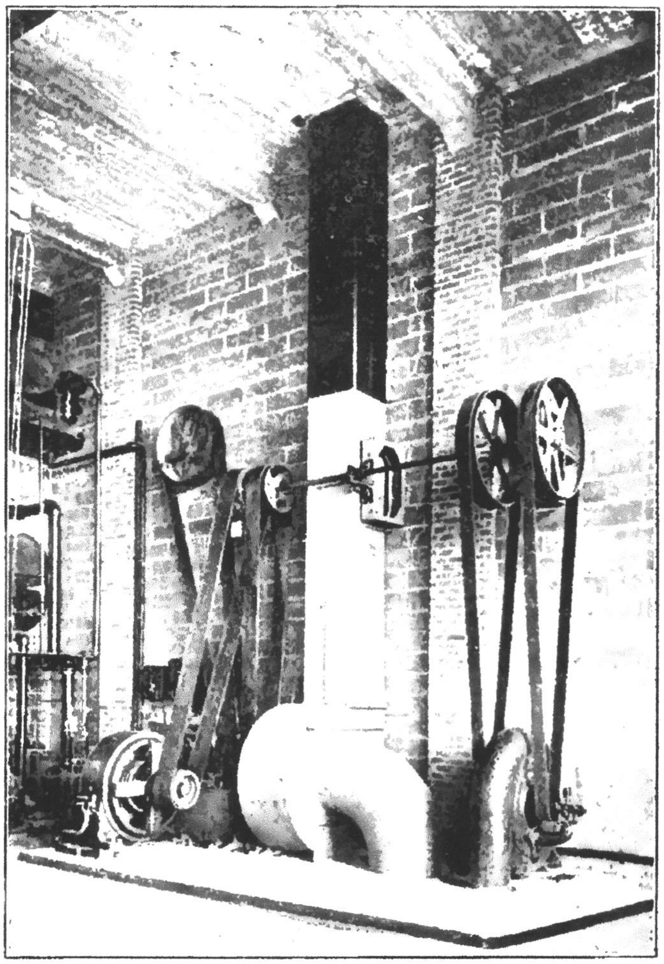
Steam for use throughout the entire shop group, both for power and heating, will be generated in four 290-horsepower Babcock & Wilcox boilers, which formerly did service in one of the Twin City power plants.



Twin City Shops—Vacuum Return Heating System Equipment.

Heating System.

The radiation pipes for heating all the buildings by steam are suspended from the ceilings, except in the paint shop, where additional coils are placed along the walls near the floor. In the car house a large coil in the basement heats air, which is blown into the pits under the cars. The condensation from the radiation pipes is returned to the boilers by vacuum pumps and collected in a steel tank in the boiler room. This tank is mounted over the vacuum and feed pumps, as shown in one of the illustrations. The Consolidated Engineering Company, Chicago, installed this heating system, which is known as the "Van Auken" vacuum system.



Twin City Shops—Blower and Exhauster Fans for Blacksmith Shops.

Foundry.

An illustration is presented showing the first and second floor plans and a sectional elevation of the foundry, to which will be added next year a 30-foot addition, making the building 230 feet long and 91 feet wide. There is a balcony along one side. Furnaces will be installed for melting steel, gray iron and brass, so that with the complete equipment the railway company will be able to make all the castings that it uses except car wheels and those of malleable iron.

As indicated on the shop group plan it is proposed at a later date to erect a special track work shop, 60 by 200 feet, with a platform for laying out special work, 150 by 200 feet in size.

Paint Shop.

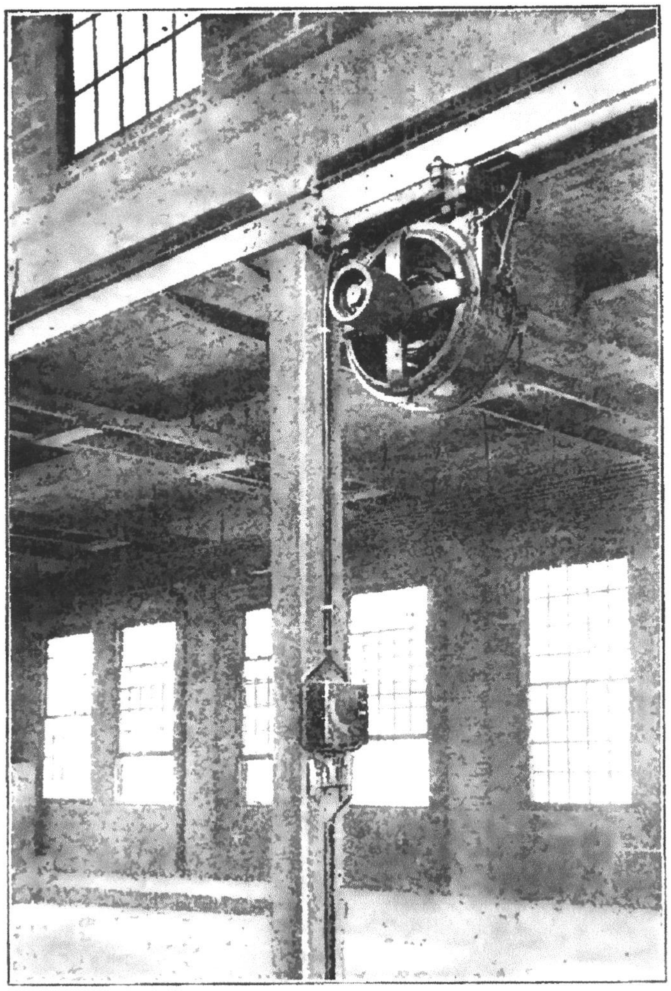
On the opposite side of the transfer table from the machine shop is the paint shop, 126 by 300 feet in ground floor area. This building has two balconies, as shown on the sectional view, and entrances are provided at both end walls, so that cars may be run through the building on any of its six tracks. It is planned to equip this shop with two overhead cranes, so that car bodies can be lifted and trucks renewed in the shortest possible time. The tracks are laid on 16-foot centers.

In the halftone illustration showing the interior of this building there will be noted rows of steel tubes on either side of the tracks. These tubes are four inches in diameter and will support malleable iron brackets carrying scaffolding for the use of the painters. The weight of the brackets and the 2 by 12 inch planks which will form the scaffolds will be counterbalanced by cast-iron weights movable inside of the tubes. Set screws will serve to fasten the brackets at any desired height alongside the car body on which the painters may be at work. These posts, which are between the two tracks in each bay, are removable from floor sockets so that if desired enough of them can be taken away to permit of lifting a car body from one track to another and thus not blocking any available track space.

The balconies of the paint shop will be used for varnishing and similar small work.

Erecting Shop.

In the erecting shop, which later will be built, there will be assembled all the finished work received from the steel and mill shop. It is not thought necessary to have the erecting or paint shops very large if the other shops, which are feeders to them, are of sufficient capacity to furnish in detail all the parts to be assembled.



Twin City Shops—Method of Supporting Motors for Driving Groups of Tools.

Mill Shop and Storehouse.

The mill shop will include tools and facilities for the ordinary mill work required in car construction and for bench and pattern work. The machine tools will be arranged in four groups, each group being driven by an electric motor. It is interesting to note that all new machines now working in these shops (except those of less than 3-horsepower capacity which are grouped) are operated by individual motor drive.

The refuse from the woodworking tools will be exhausted through tile pipes leading underground to the boiler room. The pipes are 24 inches in diameter and discharge into a metal hopper in front of the boilers.

The storehouse, which later will be erected, will be of sufficient capacity to serve the entire system of the Twin City Rapid Transit Company. Back of the storehouse outdoor tracks with storage bins having roofs will afford facilities for handling heavy supplies and for the care of second-hand and scrap materials.

EXHIBIT OF THE TWIN CITY RAPID TRANSIT COMPANY.

The advertising exhibit of the Twin City Rapid Transit Company, of Minneapolis and St. Paul, Minn., is unique. This exhibit is 36 feet long and 13 feet high, and is the entire decoration on the north wall of the sun parlor on the Steel Pier. The exhibit has been prepared at considerable expense by the "Twin City Lines," under the direction of A. W. Warnock, general passenger agent. It took Mr. Warnock, with two assistants and three stage carpenters of the Savoy theatre, two days to install the display; and it is a very interesting one.

The keynote of the exhibit is an immense water color picture, 13 feet long and 9 feet high, giving a bird's eye view of the Twin Cities of Minnesota and the park-lake region surrounding them. The view point of this perspective is about 80 miles south of Minneapolis and 60 miles high. It shows the detail of this territory, 1500 square miles of which is traversed by the electric Twin City Lines. To the northern horizon are the Rainy River district and the Canadian border, while in the upper right hand corner is seen the southwestern extremity of Lake Superior, where Duluth is located. The St. Croix river is at the extreme right, with the cities of Stillwater, Minn., and Hudson, Wis. The larger bodies of water lying to the north are Mille Lac, Leech and Winnibogoshish lakes. In the foreground can be traced the gorge of the Missisippi river. On this river are located the Twin Cities, from which the "Twin City Lines" reach out in many directions. The lowlands along the Minnesota river are shown at the extreme lower edge of the picture, while at the confluence of the Minnesota with the Mississippi is Fort Snelling, the village of Mendota, and below it Pike Island, on which was signed a treaty with the Sioux Indians, conveying to the United States the sovereignty of much of the territory shown in this map

It took two engineers four months to lay out the picture. After this part of the work had been finished, a month was spent by one man in painting the coloring effects. The picture is draped in maroon. On both sides of the picture are shown in ivory frames, with mahogany trimmings, 61 large platinum tint photographs of interesting features of the Twin City Lines—cars, tracks, bridges, permanent structures, steamboats, and docks. There are also shown, framed, a large assortment of colored posters, which are used by the company in all its publicity work. The story of "Hi Jinks, the picnic person," is presented. The entire exhibit is lighted with 85 frosted incandescent globes. The company has gone to the expense of making this exhibit in order to show the character of its equipment and permanent way and what it is doing to develop business. The exhibit is in charge of a man who wears a Twin City conductor's uniform and whose duties will be to explain the pictures and to distribute the official badges of the company and pamphlets about the Twin Cities. The value of the exhibit is over $4,000.

Conductor to Passenger—"What street do you want?"
City Passenger—"What ones have you got?"

RIDGWAY ENGINES AND GENERATORS.

It is always of first importance to the operating department of a street railway system that there be no interruption in the service and, indeed, "Old Faithful" in any power plant, is always an object of affection on the part of engineers, superintendents and managers.

Reliability is one of the strong features of the apparatus built by the Ridgway Dynamo & Engine Company of Ridgway, Penn., and this quality has often helped a Ridgway plant to carry the "peak" without interruption to the service, where a less dependable equipment would have failed.

The McEwen engine has plenty of metal where it is most needed and all materials used are of the very best. The journals and bearings are liberal and, with the generous lubrication provided, can be depended on to run cool and with minimum wear.

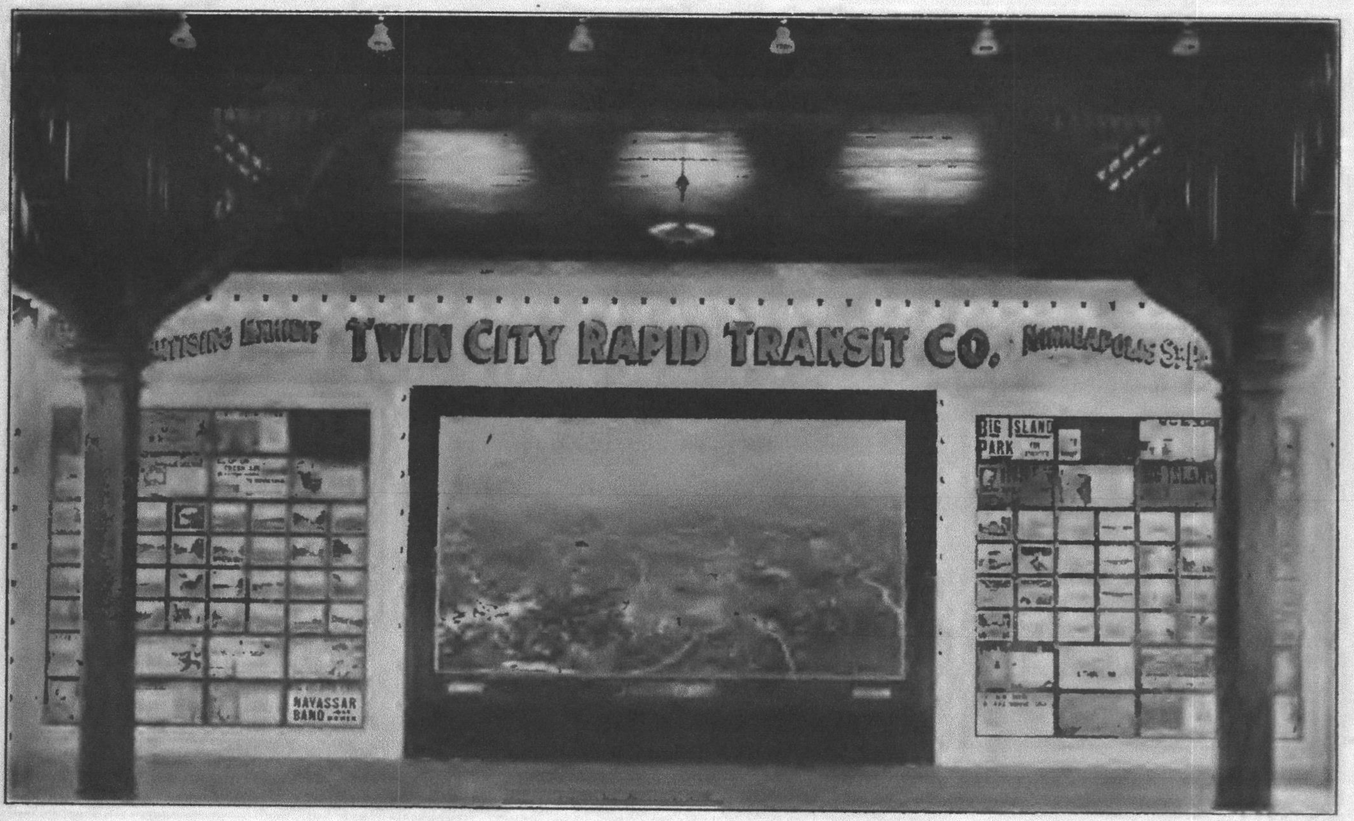
The Thompson-Ryan generator is unique in design as it is the only generator which employs the Ryan balancing-coil winding for preventing the various disagreeable consequences of armature reaction. The designers of this line of generators, believe that prevention is better than cure and have very effectively met the problem upon such grounds. By preventing the trouble before it occurs, these generators may be safely called on for very unusual overloads even from the standpoint of railway requirements and this is a quality which has made these generators as well as the engines just spoken of, very popular for power plant equipment.

The manufacturers of these lines of power machinery have a distinct advantage over many others, in being able to furnish complete units which have been built, assembled and tested under the same roof and are glad to accept the entire responsibility which this entails.

Descriptive bulletins are being distributed at the booth of the Ridgway Dynamo & Engine Company in the exhibition hall at the outer end of the pier.

THE TWIN CITY EXHIBIT.

The accompanying picture gives some idea of the advertising exhibit made by the Twin City Rapid Transit Company of Minneapolis and St. Paul in the sun parlor on the pier. As stated in a previous issue of the Daily Review, this exhibit forms the main decorative feature of the sun parlor and measures 36 feet long by 13 feet high. The map in the center is a perspective view of Minneapolis, St. Paul and vicinity, showing in detail the lake region around the Twin Cities as well as their many other attractions. An interesting collection of photographs of the "Twin City Lines" and the large posters are specimens of the publicity used by the company in promoting its parks, lakes and resorts. Of course this picture cannot do the subject justice on account of inability to reproduce colors, but the wide ivory frames, with mahogany trimmings and beautiful gold lettering, as well as the electric lighting effect, make an attractive exhibit of a character that has never yet been given at any previous convention. The speaker's stand is directly in front of the center map and the entire exhibit forms a sort of drop curtain for the convention hall which is most effective.



Twin City Rapid Transit Company's Advertising Exhibit.

Many of the exhibitors at the convention made the acquaintance of C. M. Keegan, and retained his services to decorate and furnish their exhibit spaces, and for the first few days there was considerable curiosity as to why Mr. Keegan had been able to serve them so satisfactorily not only as to prices, but in every other respect. Finally an explanation was secured. It seems that Mr. Keegan and Secretary Keegan of the Manufacturers' association met up with each other and after a heart to heart talk discovered that they were from the same part of Ireland, which accounts for it all.

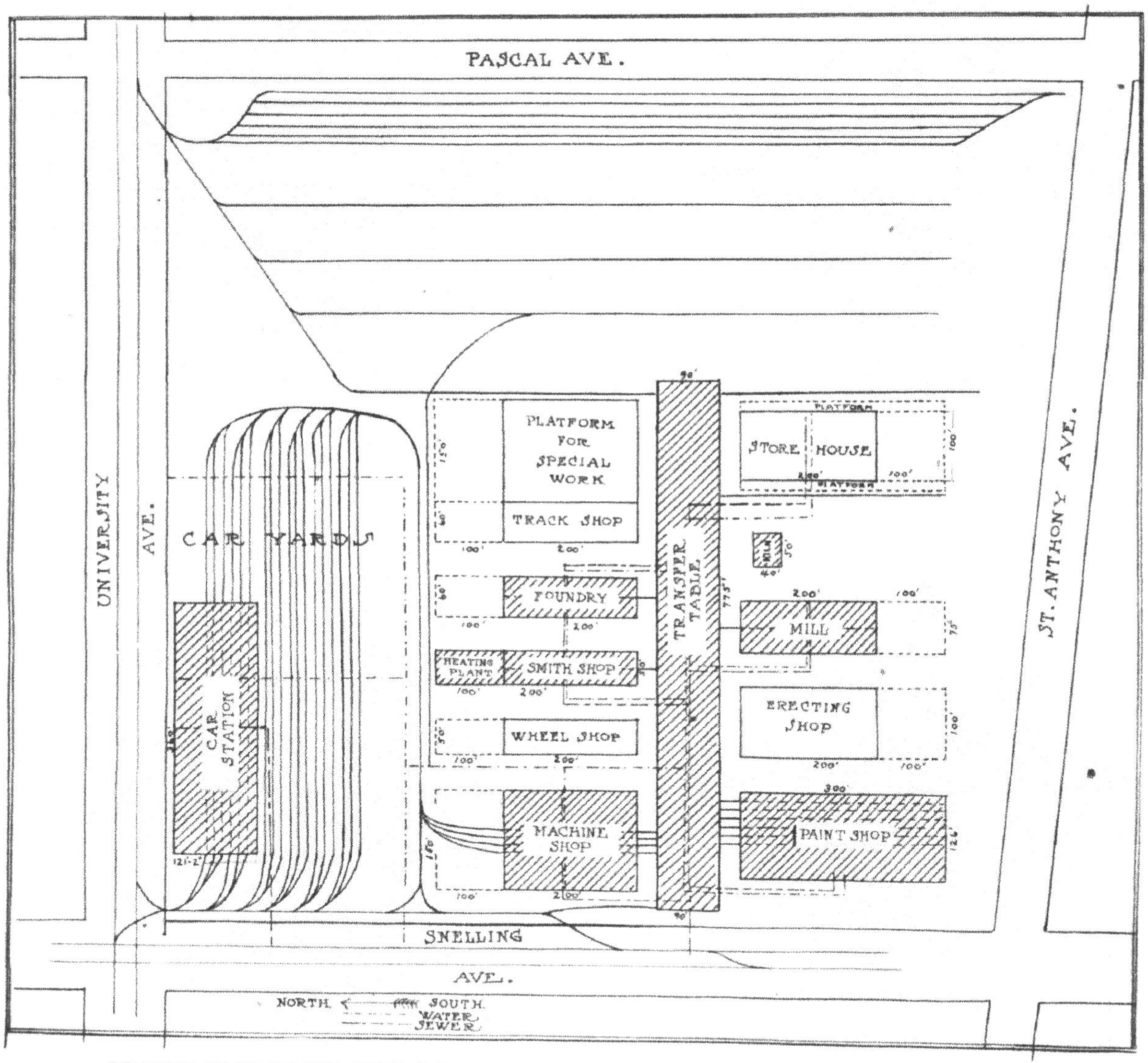
Henry Gulick, Jr., of Gulick-Henderson & Co., inspecting engineers, Pittsburg, Pa., is attending the convention.

TWIN CITY RAPID TRANSIT COMPANY'S NEW SHOPS

The Twin City Rapid Transit Company, of Minneapolis and St. Paul, has recently been engaged in building a large new shop system almost in the heart of the district it now serves, and that which will be served when future extensions now in contemplation have been made. The structures are not only large enough for the demands of to-day and of the immediate future, but are so arranged as to leave room for ample enlargement without impairing the efficiency of any part of the plant as it now stands.

The site of the new plant is almost exactly midway between Minneapolis and St. Paul, on the main electric line between the two cities, and at the junction of a cross-town line which connects by about a 5 minutes' run with two other trunk lines between the cities. It is, therefore, easily accessible from every part of the system, despite the fact that the company's lines are spread over a large area. The company was fortunate in being able to obtain the site—forty acres in all—while it was still wholly unoccupied and required only a moderate amount of grading to bring it to the street level.

Almost before the grading was done, the company set to work on six of the eleven large buildings that are to make up the completed plant as at present planned. These six buildings are now almost completed and are being equipped, a seventh is well under way, and the remaining four will be pushed along as rapidly as circumstances will permit. A plan of the shops is presented herewith. The structures already completed or nearing completion are indicated by the diagonal lines. The buildings outlined merely are yet to be built. The parts of buildings indicated by dotted lines are additions to be made as needed. The water system as arranged at present is shown by the dot and dash lines, and the sewer system by the short and long dash lines. Solid lines, except where indicating parts of buildings, stand for trackage. The plant as mapped covers forty acres, the diagram being drawn to a scale of 250 ft. to the inch.


PASCAL AVE.
UNIVERSITY AVE.
ST. ANTHONY AVE.
SNELLING AVE.
CAR YARDS
CAR STATION
PLATFORM FOR SPECIAL WORK
TRACK SHOP
FOUNDRY
HEATING PLANT
SMITH SHOP
WHEEL SHOP
MACHINE SHOP
TRANSFER TABLE
STORE HOUSE
PLATFORM
KILN
MILL
ERECTING SHOP
PAINT SHOP
NORTH
SOUTH
WATER
SEWER
90'
150'
50'
100'
200'
60'
775'
75'
300'
126'
180'
40'
121'-2"

GENERAL PLAN OF THE TWIN CITY RAPID TRANSIT COMPANY'S NEW SHOP AND CAR HOUSE

The buildings up and those to be put up are, or are to be, of reinforced concrete throughout. The foundations are of monolithic construction and the superstructures of hollow cement blocks and cement brick, made on the grounds as needed. The designs for the buildings and the plans for the grouping of the buildings were prepared after careful consultations by the heads of all the departments in any way interested. Practically every department of the system, therefore, had some part in deciding the character of the plant, for it has long been the policy of the company not

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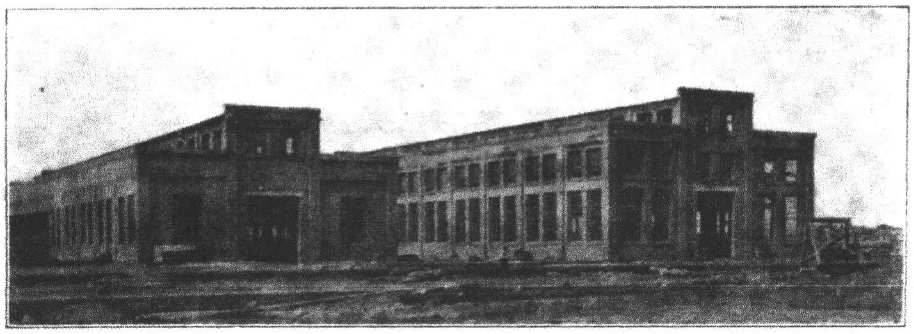
only to make all of its own repairs, but to build all of its own rolling stock after patterns peculiar to its needs as determined by experience and climatic conditions. Throughout, in both designs and groupings, the aim has been to obtain a maximum of efficiency with a minimum of expense, time and energy in operation.

The plant may be considered in two main divisions—the car station and trainmen's headquarters, and the supply storage facilities and shops proper.

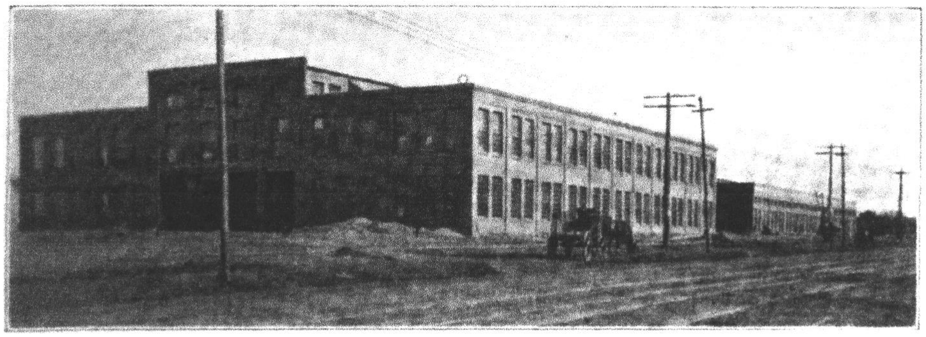


THE NEW FOUNDRY AND BLACKSMITH SHOP OF THE TWIN CITY RAPID TRANSIT CO.

The car station, with the trainmen's headquarters, stands just at the corner of the plant at the intersection of the University Avenue trunk line between Minneapolis and St. Paul and the Snelling Avenue cross-town line. In the men's quarters, which open on University Avenue, are lockers, shower baths, toilet rooms, a dormitory, and a large lounging room, which opens into the office of the head of the lines centering at this station. At the front of the building, opening on Snelling Avenue, is a large room used as a converter sub-station. Men's quarters, office and converter station occupy about one-third of the building. The other two-thirds are taken up with space for cars.

The car station, which differs from a car house, as it is not used exclusively for storage, is 360 ft. in length and contains accommodations for forty-two cars. This may seem like a limited space, but outside and to the south and east of the building are storage tracks for three or four times as many cars, and distributed through the two cities are several large car houses. All of the tracks in the car station are provided with pits, which extend the entire length, and light repairs will be made there. If extensive repairs are needed on trucks or motors they are sent to the machine shop, and all the work of the car station is under the eye of one foreman.

The truck interchange system used by the company has proved thoroughly successful and has been the more feasible because of the uniformity of the equipment used.



MACHINE SHOP, WITH PAINT SHOP IN THE REAR

Another plan that contributes to efficiency is the weekly shift of cars from regular to trip service and vice versa. By this plan cars that one week are on regular duty and put into the station only at night, and therefore get only night inspection and repairs, the next week are put on trip service, being out only two or three hours at a time and getting day inspection and repairs at the car station.

If a car body needs considerable repairs, not admitted of in the station proper, it is run to the erecting department in the paint shop, the separate erecting shop not yet having been begun, and there lifted from its trucks, which are run out for use under other car bodies, or, if they need repairs, to the machine shop. Under the truck interchange system either car body or trucks go into service as soon as ready and demanded.

The machine shop is equipped for heavy work, such as the use of unusually large cars demands and is provided with three traveling cranes of 12,000 lbs. capacity each. These command the entire central bay, 50 x 200 ft., which is given up wholly to motor and truck repair and construction work. No pits are used as the motors employed are designed for top inspection. On the second floor the lighter work is done—armature winding and air-pump work. Access to the second floor is provided by two stairways and two electric elevators on opposite sides of the building.

The machinery of the machine shop, as of the entire plant, is electrically driven at 230 volts d. c. Machines of less than 3 hp are grouped. Others are run on independent motors.

Just east of the machine shop is the site of the wheel shop, as yet not begun, its work for the present going to the machine shop. Next up the row is the smithy, with the usual equipment of such a shop, but on a large scale to meet the demands of a manufacturer as well as a repair plant.

The foundry is a structure of special interest as a part of a street railway shop system. It is being equipped for the manufacture of all of the company's castings except those of malleable iron and wheels. The regular demand of the company for castings such as it will hereafter manufacture for itself, as shown by last year's record, runs: brass 90 tons, steel 300 tons, gray iron 900 tons. With the increase in the company's business and the expansion of its territory already alluded to, these figures are likely soon to be largely increased.

Beyond the foundry is the site of the track shop for the manufacture of track special work, and a large paved yard for the laying out of such work. This yard will have direct trackage facilities and will adjoin the supply yards and sheds, giving both paved yard and track shop ready access to the material they will use.

In the rear of the smithy is the heating plant for the

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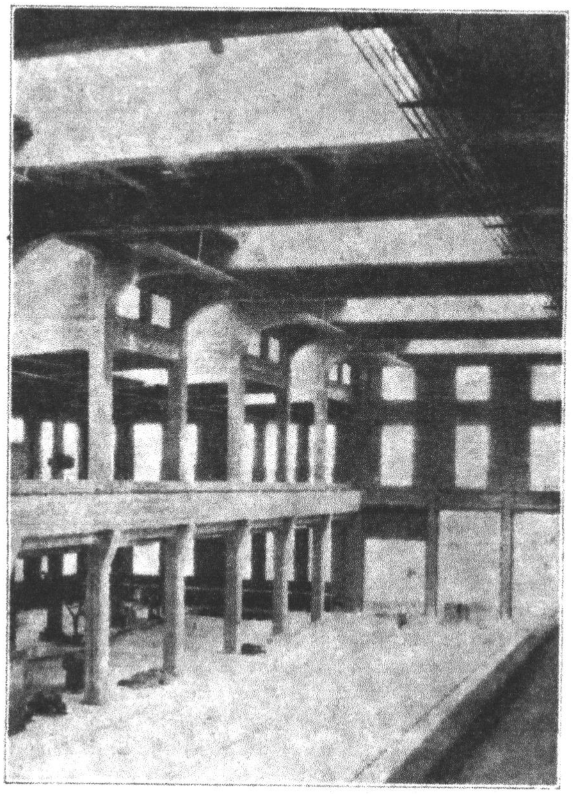
whole layout, saving only the car station, which has a heating system of its own of the fan type. The general system, however, is of the vacuum type. The radiation pipes for the different buildings are placed for the most part overhead, out of the way and saving in the aggregate much valuable space.

Across the transfer table, along which the buildings named are lined up, is another group of buildings. First, on the east, adjoining the supply yard tracks is to be a large storehouse two stories in height and 100 ft. x 200 ft. in area at first, and eventually 100 ft. x 300 ft. exclusive of platforms. This will be provided within and without with cranes for the handling of heavy material, as will the track shop and yard across the way. Next to the storehouse, toward Snelling Avenue, stands the dry kiln, now building, and to the south of that is the site of the lumber yard. Heat for the dry kiln will be supplied from a steam coil, and fans will give circulation. Further to the west comes the site of the erecting shop, yet to be built, and after that the paint shop, for the present to serve, as stated, both as paint and erecting shop.



INTERIOR OF MACHINE SHOP JUST AFTER COMPLETION

The arrangement of the buildings on both sides of the transfer table will at once be seen to be logical and natural, whether for repairs or for the construction of new rolling stock. First on the east are the sources of supplies, the open yards, the sheds and the storehouses. From these may be sent to any of the buildings with facility and dispatch, materials needed for repair work. Likewise, if large construction work is in order, supplies go down along the line to the foundry, the smithy, the wheel shop, and the machine shop, the place of the final assembling of the heavy work, or, on the other side of the transfer table, materials go from storehouse and dry kiln to the mill for the manufacture of all of the woodwork of the cars, thence to the erecting department, and thence again to the paint shop, where the cars receive their final touches and are shunted out to the car station. The transfer table itself is 90 ft. wide and has a run of 775 ft. Power is taken from a wire carried against the side of the pit and protected by a projecting ledge of concrete and wooden guard.

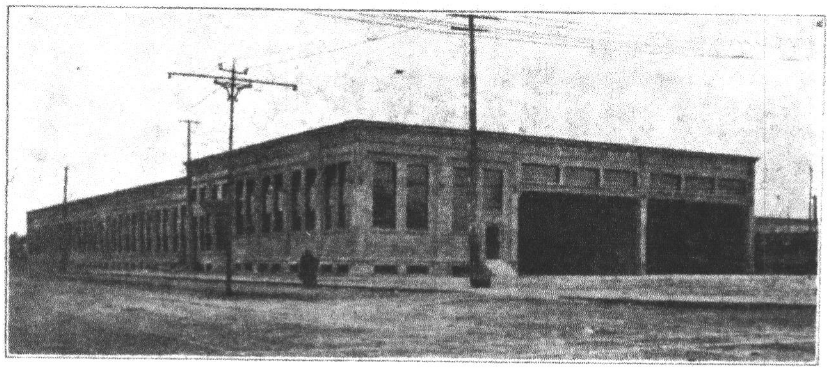
At the side of the transfer table pit are 30-ft. planked platforms extending each side of the pit for its full length. These make possible the trucking of material or work from one shop to another without calling upon the transfer table.

An office building and men's room is to be added to those shown in the plan on page 318. It will probably be placed along the Snelling Avenue side of the machine shop. The feature of special interest in this is the contemplated men's room. This is to be provided with lockers, toilet facilities in addition to those in the separate buildings, chairs and tables. It is, in short, to be the lunch room of all the employees of the shops; the company is considering the plan of serving, along with the lunches brought by the men, hot soup and coffee.

OBSERVATION CAR RESULTS IN MONTREAL

The Montreal Street Railway Company operates two fine observation cars on what is known as the Round-the-Mountain line. The cars run every afternoon and evening, Sundays and holidays, weather permitting. They pass the corner of Peel and St. Catherine Streets on the hour, but also stop at other points when signaled. The trip is through some of the most attractive parts of the city and then around Mt. Royal. The time is 1 hour, and the cost 25 cents. The cars are built entirely open, and this, with the step arrangement of the seats, give the passenger an unobstructed view from any position. Arches of colored incandescent lamps make the car attractive also for evening tours.

The construction cost of the cars was about $5,500 each, and the total income for the summer months of 1906 was $6,645, or about $3,323 per car. The total wages paid for the operation of both cars was approximately $753. The average income on ordinary days is about 45 cents per car-mile, but as high as 60 cents on Sundays and holidays. As the cars have been in use but a short time, the cost of maintenance and repair has been negligible, and is likely to remain so for years to come because they are very substantially constructed.



BUILDING FOR CAR STORAGE, OFFICES, TRAINMEN'S QUARTERS AND SUB-STATIONS

PLAN NEW CAR SHOPS
Minneapolis Tribune (1867-1908); Sep 4, 1904;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 20

PLAN NEW CAR SHOPS

STREET RAILWAY COMPANY TO BUILD IN ST. PAUL.

Large Tract of Land Fronting on University and Snelling Avenues to Be Improved by Strictly Modern Buildings Equipped With the Latest Machinery.

Twin City visitors passing the Midway district on the Interurban cars at this time next year will see a wonderful change in the surroundings, for close to University avenue will have been erected, or at least partially completed, one of the finest modern car plants to be found anywhere. This will be the new carshops of the Twin City Rapid Transit company, the plans for which have just been completed.

Fourteen huge buildings, occupying a tract of nineteen acres, and actually covering eight acres, handsome structures, some of the largest, built completely of reinforced concrete, and each as solid as one massive rock, will be standing on the fine site fronting on Snelling avenue and situated between University and St. Anthony avenues.

The big office building will run the entire length of the University side of the shops. Here will be, besides the offices, a large assembly hall 105x39 feet. There will also be a large reading room and a bowling alley. Shoproom quarters for the trainmen and store rooms will take up the rest of the building. The structure will be artistic in design, presenting a fine aspect from the cars.

The great carhouse, covering upwards of three acres, will be the largest of the buildings, and will be built at a cost of from $175,000 to $200,000. This will front on Snelling avenue. It will be divided into five parts, three of which will be car storage halls, separated by great steel shutters, which may be easily raised or lowered. This device, besides its convenience, would in case of fire shut off completely the burning portion from the rest.

One of these compartments will be used for washing the cars and this will be provided with a seven-inch cement floor.

The floors and pits of the pitroom will also be of seven-inch cement, the structure being 520x105 feet in area.

An immense transfer table will run between the buildings the entire length of the plant. Cars will thus be handled with the least possible labor and time.

Sidetracks will, of course, run through every shop. The carroom and pitroom will be supplied with the best of modern machinery and appliances for handling the heavy cars, which will be raised or lowered, turned this way or that, as easily as a toy car might be turned over in the hand.

Twelve other large buildings, each of which will be a model of its kind, will be a paint, varnishing and upholstering shop, 300x125 feet; a coach shop, 300x200 feet; a mill, 150x100 feet; a dry kiln, 50x40 feet; a storeroom, 200x100 feet; a motor repair shop, 250x90 feet; a machine shop, 250x60 feet; a truck, frog and blacksmith shop, 150x100 feet; a foundry, 100x75 feet; an iron house, 75x25 feet; a coalhouse, same dimensions; power plant, with building, 100x100 feet; fireproof oil storage building, 40x30 feet.

MAKES CEMENT BLOCKS
Minneapolis Tribune (1867-1908); Jun 25, 1905;
ProQuest Historical Newspapers Minneapolis Tribune (1867-19
pg. 14

MAKES CEMENT BLOCKS

PARENT PLANT OF NEW INDUSTRY ESTABLISHED HERE.

Pitts Brothers Have a Machine for Which Wonders Are Claimed—Street Railway Company Borrows It for Its Snelling Shops.

The parent plant of a business which its promoters believe will in time become one of the greatest industries of the country has been established in Minneapolis by Pitts Bros., wood and coal dealers.

The new industry centers about a mammoth machine for the manufacture of cement building blocks, which has a capacity of 1,000 blocks a day. The machine is the invention of W. L. Dow of Sioux Falls, S. D., and one of the two machines which have been built has been loaned to the Twin City Rapid Transit company for the manufacture of blocks to be used in its new plant at Snelling and University avenues.

The company will have use for 130,000 of these blocks in their new buildings, and will return the machine to the manufacturers after their work is finished.

There are very many individuals and firms in Minneapolis engaged in the manufacture of cement blocks by the use of molding machines, the labor being performed principally by hand. With the "Perfection Power Block Machine," as Mr. Dow's machine is called, a pressure of from 50 to 150 tons is secured in making the blocks, which are said to come out as hard as granite and wholly impervious to sun, moisture or weather conditions of any kind.

The blocks are 24 inches long, 8 inches high and 12 inches thick, and contain hollow spaces.

The machine is located at 2852 Hennepin avenue. The new concern will employ ten men at present. The inventor is negotiating with local machine shops for the manufacture of his device.

ERJ 10-10-1908

MINNEAPOLIS, MINN.

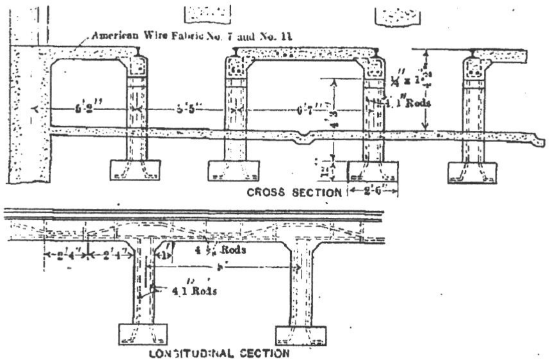
The Snelling Avenue car house of the Twin City Rapid Transit Company is used primarily as an inspection and cleaning depot. It adjoins the company's main repair shops and is a concrete, fireproof structure 350 ft. x 121 ft., containing six pit tracks in two separate bays. This company stores its cars in the open on yard tracks, having a capacity of 275 cars at one side of and in the rear of the car house.

The night inspection crew inspects, oils and cleans 160 cars in this house each night, and the day crew handles 40 tripper cars in the same way. The tripper cars and regular cars are changed off each week to give the same average service to all rolling stock. The last 40 cars, which are inspected at night, are left in the house, but are put in service on the first runs in the morning so as to clear the house. The light repair work done consists of inspecting and adjusting brakes and shoes, controllers, electrical equipment and, when necessary, changing trucks. The practice in all of the car houses of the Twin City Rapid Transit Company is to remove bad order trucks and replace them with trucks in good operating condition from a supply kept on hand at each car house. Bad order trucks are sent to the main shop for repairs in trains

(CONTINUED ON NEXT PAGE)

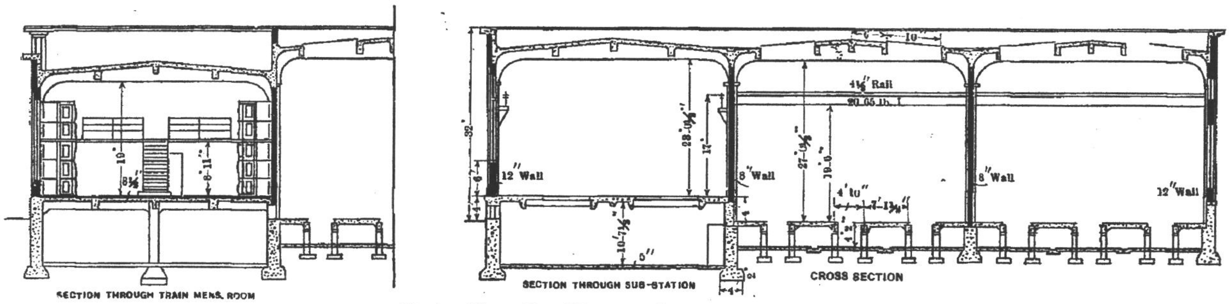
10-10-1908

of five or six trucks coupled together with temporary coupling bars and hauled by a work car. The motor leads of the rear truck are so connected that if the train should break in two the motors on the rear truck would act as generators and produce a braking effect.


American Wire Fabric No. 7 and No. 11
6'2"
5'5"
6'7"
2'6"
CROSS SECTION
4 ½ Rods
4 1 Rods
LONGITUDINAL SECTION

Twin City Car House—Details of Pit Reinforcement

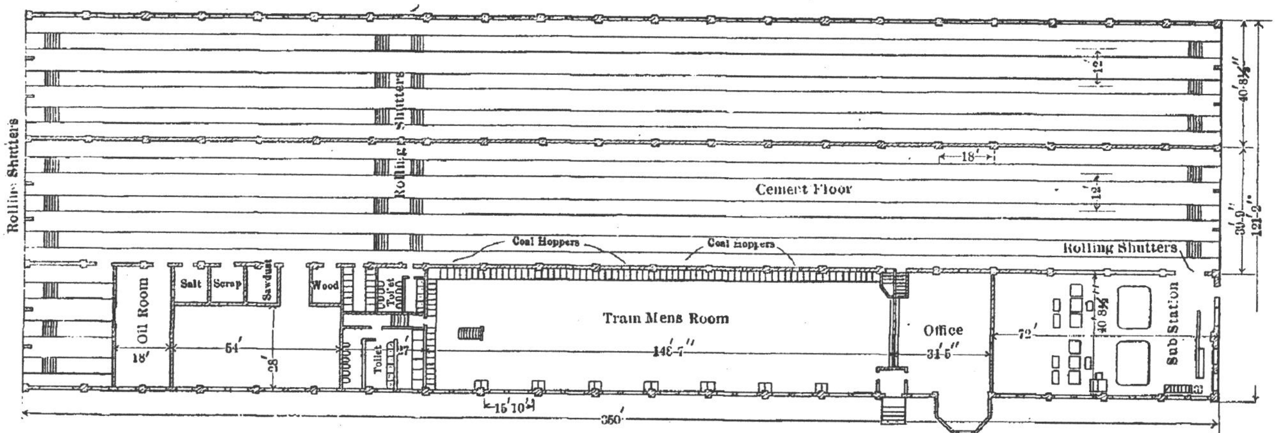
The car house walls are made of hollow concrete blocks 2 ft. long 9 in. thick and 7 3/4 in. high. The outside of the exterior walls is finished with a veneer of cement bricks of standard size. Reinforced concrete girders 40 ft. long support the concrete roof slabs 4-in. thick, which are reinforced with wire fabric and steel rods and are waterproofed with pitch and gravel. All floors are of reinforced concrete.


SECTION THROUGH TRAIN MENS. ROOM
12" Wall
8" Wall
8" Wall
12" Wall
4½ Rail
SECTION THROUGH SUB-STATION
CROSS SECTION

Twin City Car House—Cross Sections

The accompanying drawing shows the method of reinforcing the pit columns and girders supporting the rails and floor slabs.

The outside bay of the car house is occupied by a substation room, superintendent's office, trainmen's rooms and storeroom for light repair parts, with a basement floor below. All outside openings in the end walls of the car house are closed with Kinnear rolling steel shutters. No sprinkler system has been installed because cars are not stored in the house any longer than is necessary to clean and inspect them. This company has two other older car houses in which sprinklers are used, however.


Rolling Shutters
Rolling Shutters
Rolling Shutters
Cement Floor
Coal Hoppers
Coal Hoppers
Oil Room
Salt
Scrap
Sawdust
Wood
Toilet
Toilet
Train Mens Room
Office
Sub Station
18'
54'
148'-7"
31'-5"
72'
15'10"
350'
40'-8½"
121'-2"

Twin City Rapid Transit Company—Plan of Snelling Avenue Car House

Two rows of skylights in the roof over each bay provide ample light during the day, and at night the house is illuminated with enclosed arc lamps and Gem 50-watt incandescent lamps fitted with holophane reflector globes. The building is heated with hot air blown through pipes into the pits, from which it rises to heat the remainder of the space above the floor.

AVERY® POLY-VU

MINNEAPOLIS

10-10-1908

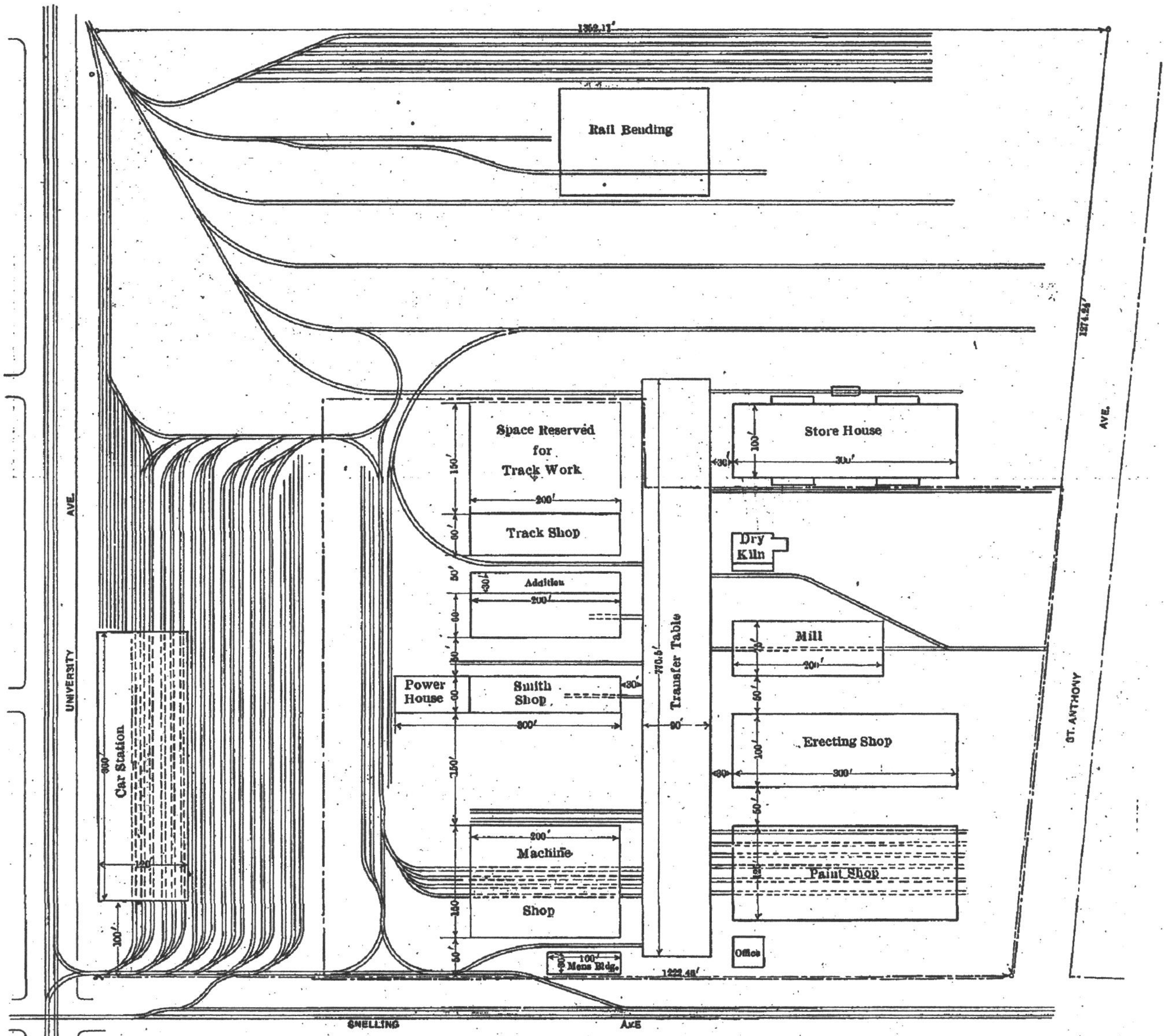
The new Snelling Avenue shops of the Twin City Rapid Transit Company are centrally located about half way between Minneapolis and St. Paul, on a plot of ground covering about 40 acres. The different departments are housed in separate buildings placed on both sides of a transfer table pit 90 ft. wide and 776 ft. long. These buildings are all of one type of construction, having walls of hollow concrete blocks faced with cement bricks, reinforced concrete columns and roofs and granolithic concrete floors.

The shop department makes all repairs to rolling stock and, in addition, builds trucks and cars, overhead line material, track special work, maintains the company's buildings and does such other general electrical and mechanical work as cannot be done conveniently by other departments. Under the jurisdiction of the shop master mechanic are the engineers, firemen and deckhands of the 13 passenger boats operated by the company on Lake Minnetonka and all of the car house inspection and repair forces.

The machine shop building is 150 ft. x 200 ft., and is divided into a central bay used for truck overhauling and two narrower bays on each side in which the machine tools are placed. Over these side bays are galleries, also divided into twin bays, in which the electrical repair work and manufacturing is carried on. There are four through tracks in the central bay or truck shop, and these are served by four 50-ft. span crane bridges, each of which carries four 6-ton electric hoists, making a total of 16 hoists. Each of the machine shop bays is served with an 18-ft. span I-beam crane bridge traveling the full length of the shop, which carries one 2-ton electric hoist. The electrical shop bays in the galleries above are served with similar crane bridges which, however, carry hoists of only 1-ton capacity. No pit tracks are used in any part of these shops, all work being done on the floor.

In the forge shop, which is a building 60 x 200 ft., one I-beam crane bridge with hand-chain block hoist is provided and also a number of jib cranes with chain blocks to serve the large forges and power hammers. The erecting shop, 300 ft. x 100 ft., is served with a 10-ton electric traveling crane having a span of 60 ft. and a travel of 200 ft.

The shops are lighted with arc lamps hung from the ceiling and 50-watt Gem incandescent lamps with holophane reflectors on the side walls. All lamps are operated on a 250-volt circuit. The buildings are heated with a vacuum return direct steam system.

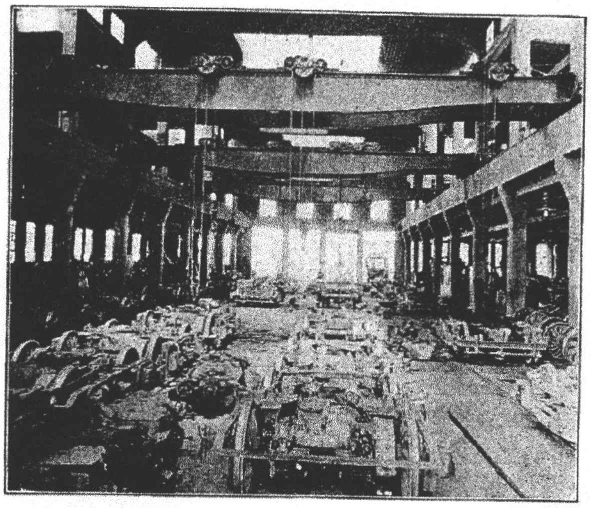

1352.11'
Rail Bending
1374.24'
AVE.
ST. ANTHONY
UNIVERSITY
AVE.
Space Reserved for Track Work
150'
200'
Track Shop
60'
50'
Addition
30'
200'
60'
30'
Power House
Smith Shop
60'
30'
300'
150'
Machine
200'
Shop
150'
50'
100'
30'
Mens Bldg.
Transfer Table
776.5'
90'
Store House
100'
300'
30'
Dry Kiln
Mill
200'
50'
Erecting Shop
100'
300'
30'
50'
Paint Shop
120'
Office
Car Station
300'
120'
100'
1222.48'
SNELLING
AVE

Twin City Rapid Transit Company—Plan of Snelling Avenue Shops

AVERY® POLY-VU

The following is a list of the principal tools installed:

20 lathes
17 grinders
6 milling machines
20 drill presses and boring machines
2 keyseaters
2 planers
1 wheel press
2 metal cold saws
3 air compressors
2 shapers
3 steam hammers
1 power hammer
9 punches and shears
3 rolls and formers
4 heating furnaces
8 riveters and drills
5 pipe and bolt cutters
11 forges
1 bulldozer
1 forging machine
7 surfacers and jointers
1 sander
7 saws
2 tenoners
3 molders
3 mortisers
1 two-spindle shaper



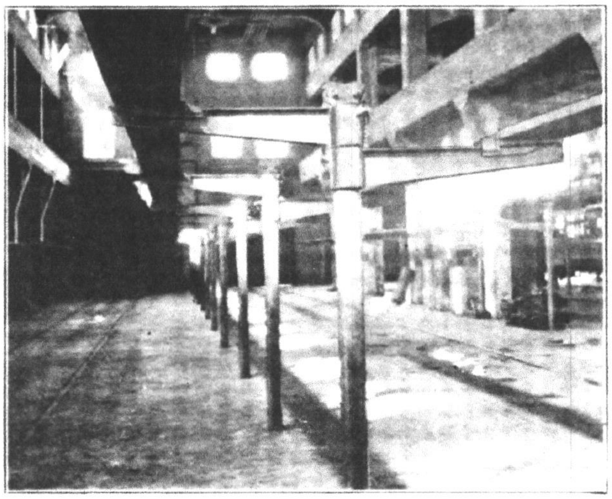
Twin City Shops—Truck Aisle

All tools requiring more than 5 hp are individually driven by direct-connected motors, but the smaller tools are group driven by motors suspended near the ceiling. About 60 motors of various sizes are used for driving the tools and all are connected on a 230-volt direct-current circuit.

SEPT 1908

SCAFFOLDING FOR THE PAINT SHOP

The engraving shows a serviceable arrangement for supporting the car painters' scaffolding as used in the paint shop of the Twin City Rapid Transit Company. The standards are formed of 4-in. pipe set in sockets in the concrete floor. The planks on which the men work are supported on adjustable brackets as shown. The feature of the arrangement is that the two brackets on each post are counterbalanced by means of a chain which passes from one bracket up over a pulley at the top of the post, thence down the inside of the pipe, thence around a pulley attached to an ordinary window weight, then up over another pulley to the other bracket. Thus the single weight inside the pipe standard serves to counterbalance both bracket arms, although either one can be raised or lowered independently of the other. Both arms will stay in any position due to the binding effect at the lower edge against the post, but they can be raised or lowered freely by raising the tip end of the arm.



Adjustable Scaffolding for the Paint Shop

Each bracket projects 3 ft. 3 ins. from the post, but by means of extension pieces the plank can be carried 4 ft. 3 ins. from the center line of the standards.

The arrangement was devised by Master Mechanic W. J. Smith, and has been found a convenient and practicable method of supporting the painters' scaffold.

5-28-1910

The large Snelling Avenue repair shops of the Twin City Rapid Transit Company were illustrated and described in the *Electric Railway Review* for Oct. 14, 1907, and the Electric Railway Journal for Oct. 10, 1908. The buildings first erected included a machine shop 200 x 150 ft., a smith shop and boiler house 50 x 300 ft., a foundry 60 x 200 ft., mill shop 75 x 200 ft., paint shop 126 x 300 ft., and a dry kiln. Since the time of the first description a storehouse 300 x 120 ft. has been completed and now a shop for repair work on all equipments, except passenger cars, is under construction. In erecting this structure it is planned to provide a shop building in which repair work of all kinds can be done on all of the special rolling stock equipment owned by the company. This will provide against taking miscellaneous equipment into the regular car houses and thus will not permit delaying work on the regular passenger cars. After the completion of the new shop it will be possible to keep all miscellaneous equipments out of the paint shop. This so-called "general" repair shop is 90 x 122 ft. in size and, like all the other buildings in this large shop group, is of fireproof construction and is designed for extension.

The track capacity of the new shop will be sufficient for 11 large cars, and in designing the structure special attention has been given to the provision of ample drainage and heat, so that snow and ice may quickly be removed from sweepers and other special equipments. The interior of the building is lighted from the north by skylights. The tracks, for one-half their length from the entrance doors, will be provided with pits; the other half of the track space is floored over and will be used for carpentry, painting, etc. The building will have two overhead cranes of 15 tons capacity each, so arranged that they can be used to raise the bodies of any of eight cars. A small store room and an oil room are being built in connection with this structure. It is planned to install a waste-reclaiming apparatus.

The earlier description of the Snelling Avenue shops included floor plans of the steel and gray iron foundry, which is now being made ready for use. This building is 200 ft. long by 91 ft. wide and is subdivided into two sections; one 60 ft. wide, which is open to the roof and serves as a general molding and pouring floor; the other 31 ft. wide, which is two stories high and contains the storage spaces and miscellaneous foundry equipment. A single track enters the main section of the building, terminating under a 10-ton traveling crane which spans the entire foundry floor.

The principal equipment on the first floor of the new foundry will include two size 3½ cupolas and a 2-ton open-hearth steel converter manufactured by the Whiting Foundry Equipment Company, Harvey, Ill. The cupolas and converter will deliver hot metal into large ladles which in turn will be handled by the overhead crane serving the molding floor. The ground floor of the two-story section of the foundry is made up of a row of rooms interconnected by an industrial railway track and all opening onto the main room of the building. With the industrial railway it will be possible to transfer heavy parts and foundry supplies such as sand, iron, etc., to any part of the building and to storage yards located outside. The industrial track leads over the platform on an elevator by which a car may be raised to the charging floor.

The row of smaller rooms opening off from the main foundry room includes a brass foundry with four crucibles sunk below the floor level, and a large air-blast crucible. Storage space is provided for sand, coke and pig-iron, both inside the building and outside. The sand room is reached by the industrial railway and its equipment includes a motor-driven sand mill. The core room and its oven will be served by a steel car which will expedite the handling of cores between the molding tables and the oven. A cleaning room is to be equipped with grinders, a tumbler and a cold saw, all driven by electric motors. On the second floor is a large pattern room and the charging room for the cupolas. A motor-driven rotary blower serves the two cupolas and another similar blower driven by a 70-hp motor furnishes air for the converter. When this foundry equipment has been installed it will be possible for the Twin City Company to manufacture all of the brass, iron and steel castings required for construction and maintenance use.

NEW STORE HOUSE

The new storehouse shown in the original plans of the Snelling Avenue shops, has recently been completed. This is a fireproof building 120 x 300 ft. in ground dimensions, having three floors. The construction of the building required 600 tons of structural-steel columns, girders, beams, etc., all of which was fabricated in the nearby car-building shops of this company. The steel window frames and the steel shelving and storage boxes also were built by the railway company. The new structure provides fireproof storage for the supplies of the entire railway system. The building may be reached by a steam railroad track along one side and by two trolley tracks leading to the shop transfer table.

PV119ED
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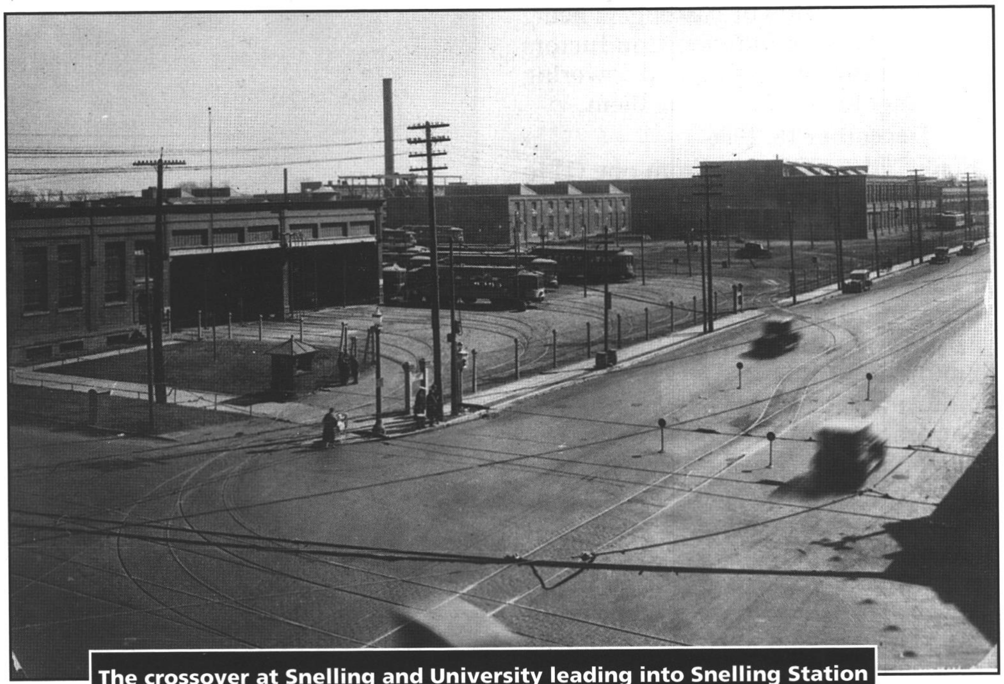
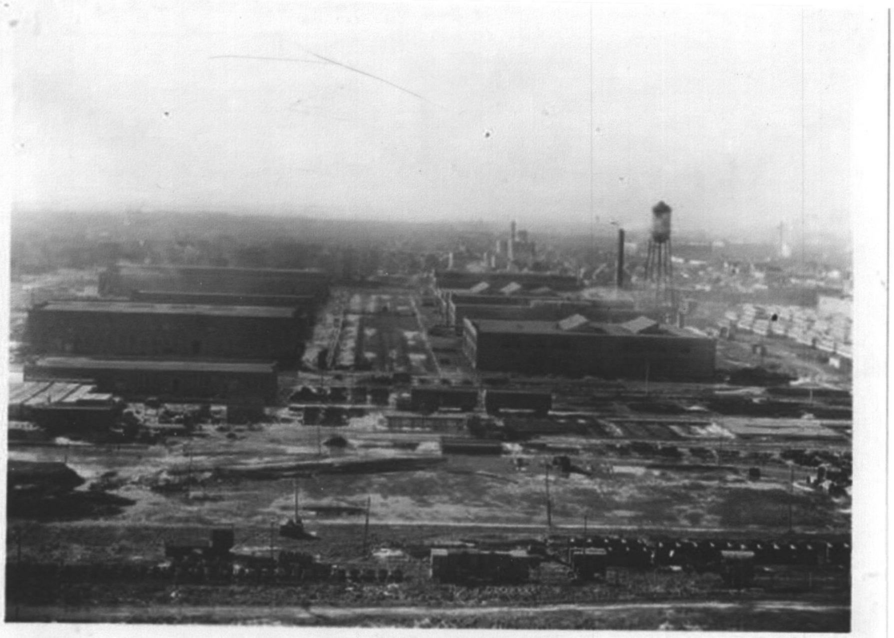
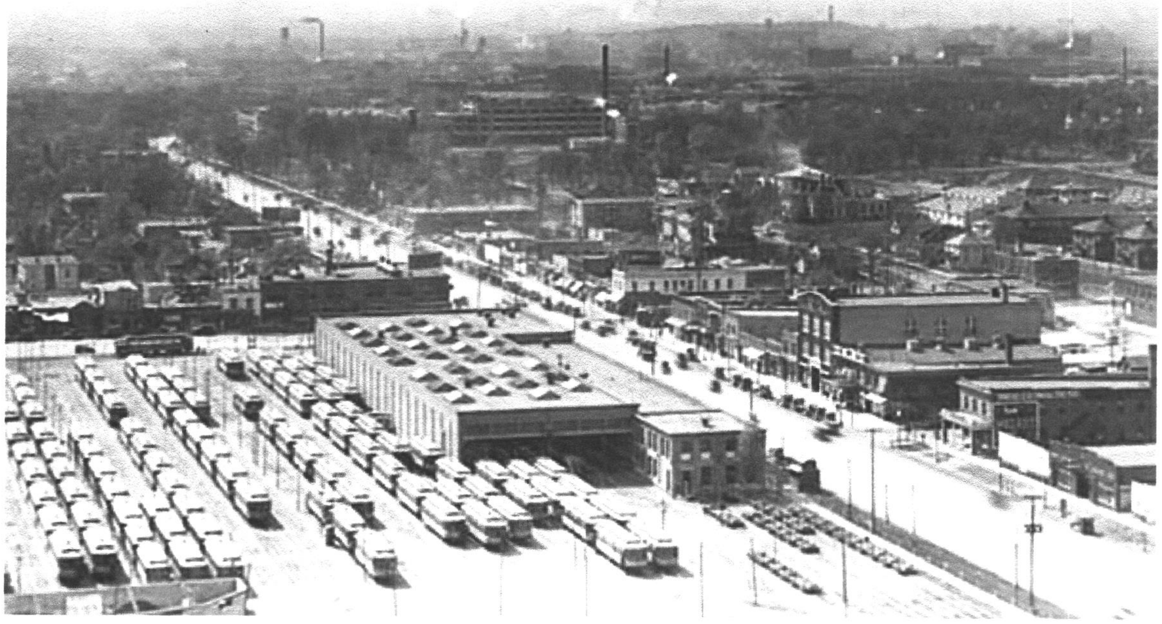


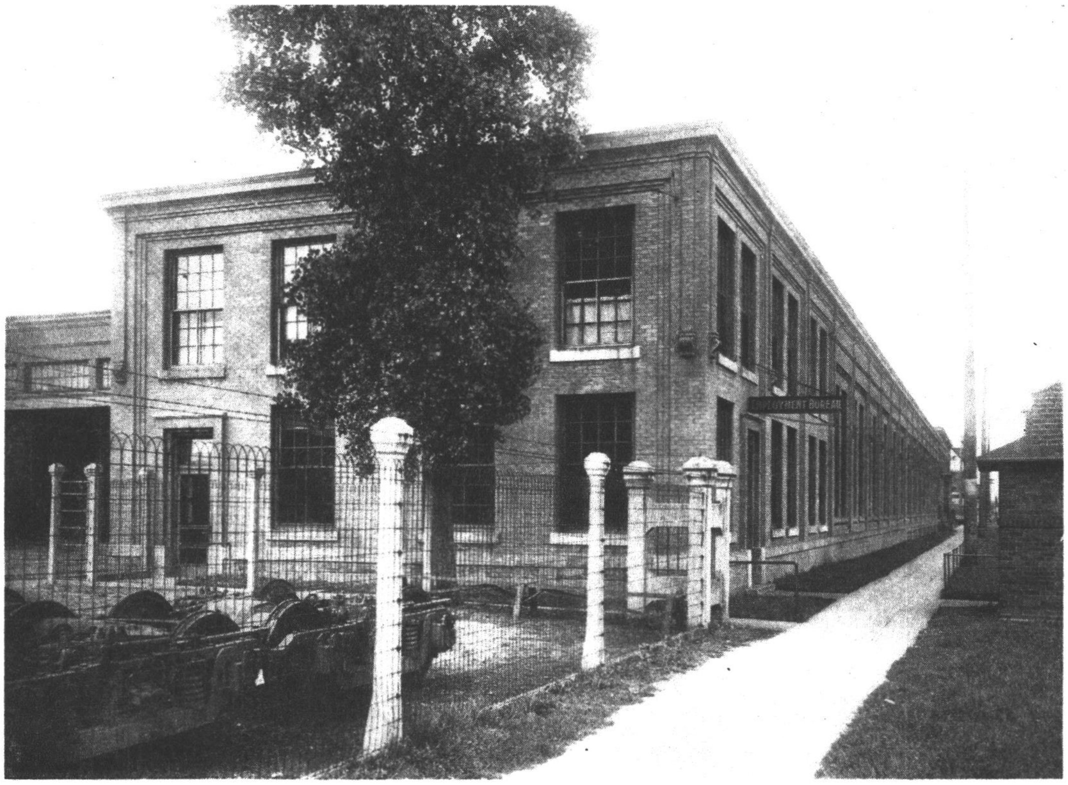
The crossover at Snelling and University leading into Snelling Station



TRACK DEPT. YARD LOOKING SOUTH



St. Paul—
Snelling Car House
with Employment
Bureau and Medical
Office



EMPLOYMENT BUREAU

Fire Protection for a Carhouse and Storage Yard

Single and Double Nozzle Towers Are Used with Independent Water Supply

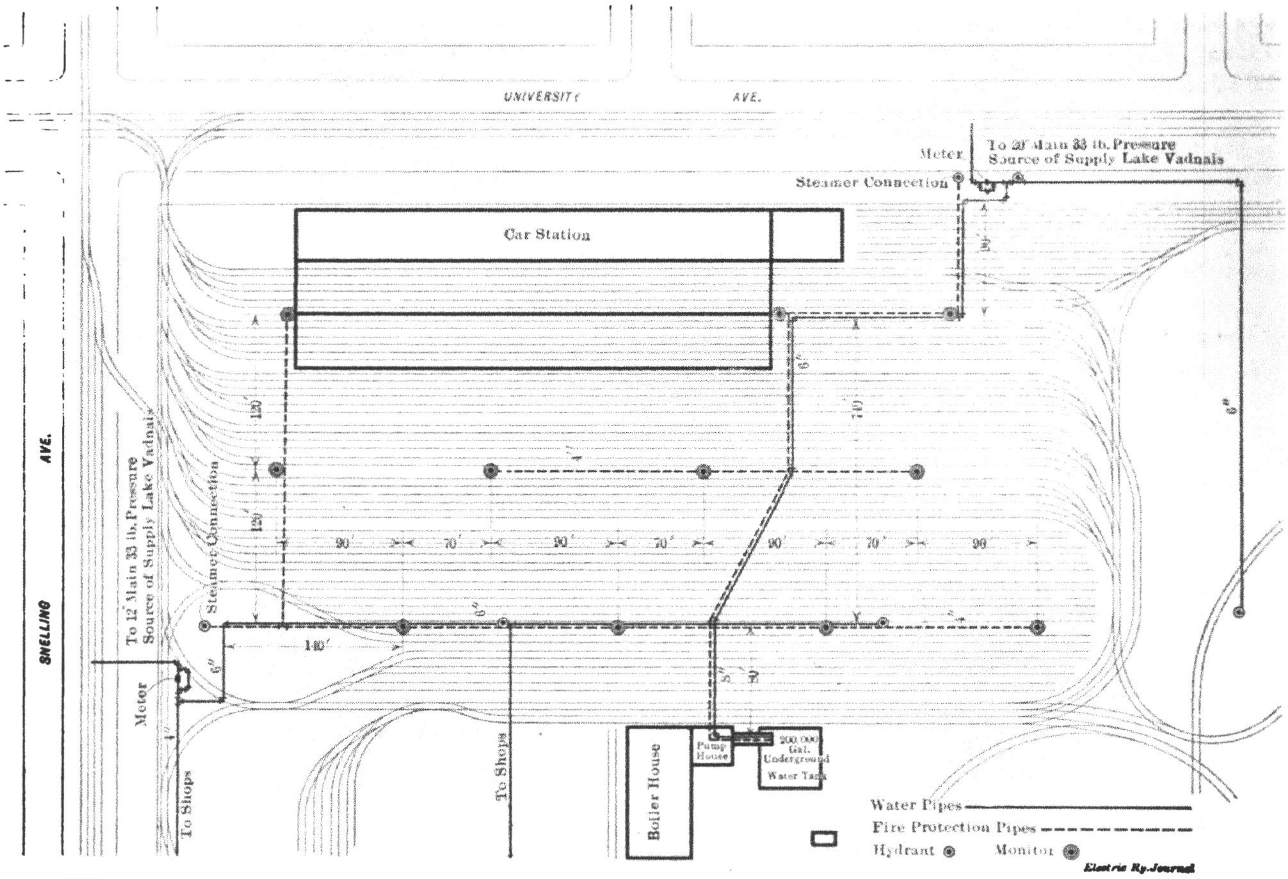
The Twin City Rapid Transit Company has installed a turret-nozzle system of fire protection at its Snelling Avenue carhouse and storage yard in Minneapolis, Minn. The general arrangement is shown in the track and building plan and includes nine single nozzle towers protecting the storage yard and two double nozzle towers located at each end of the carhouse in the centers of the entrances. The single nozzles are staggered at 160-ft. intervals along two lines 100 ft. apart, thus making the greatest water-play radius 80 ft., a distance which can easily be reached with the water pressure maintained on the supply mains.

The single nozzle tower consists of a 5-in. extra-heavy pipe extending 14 ft. above the ground and above the roofs of the cars in storage. At this height the size of the pipe is reduced to 4 in. by a special reducer casting which also acts as a support for the operator's platform. The platform is 41 in. in diameter, forming three-quarters of a circle, and is furnished with a pipe handrail. A structural-steel ladder is used to reach the platform and is applied to the 4-in. pipe just below the nozzle. The valve, which is 7 ft. below the ground surface, is operated from the tower platform by a hand wheel attached to the upper end of the valve rod. The rod is incased in a 2-in. pipe which serves to stiffen and protect it. The 1-in. nozzle is provided with horizontal and vertical swivel joints which permit it to be turned at any angle and elevated to any desired position. All working parts, including the nozzle and swivel joints, are made of bronze.

In order to protect the 5-in. riser pipe from corrosion at the ground line and at the same time provide additional bearing surface, it has been incased in a 6-in. pipe and the space between the two calked with lead. An automatic drain valve has been installed on the tower side of the shut-off valve which opens when the latter is closed and permits the water standing in the riser pipe after the turret or monitor has been used to drain through a small pipe to the nearest sewer, thus eliminating any liability of freezing at low temperature.

The double nozzle towers located at each end of the carhouse for protection of cars inside of the building or near it are similar in construction to the single nozzle towers except that a 4-ft. x 8-ft. grated operator's platform is provided and a gate valve has been installed just back of each nozzle so that one can be operated at a time. A sprinkler system has not been installed inside the building because the streams from the nozzles at each end of the carhouse will reach all points inside. This arrangement was considered to be sufficient protection by the designing engineers.

Water at 33 lb. pressure is supplied to the fire-protection system through a 20-in. city main on University Street and a 12-in. city main on Snelling Avenue. Two 6-in. pipes lead direct from the city water mains to an 8-in. pipe which feeds the 200,000-gal. underground supply tank, the location of which is shown in the general plan. The underground tank serves as the supply to a small triplex pump which normally maintains a pressure of 110 lb. on the mains to the monitors. As soon as the fire pumps are automatically brought into service the tank serves as a reservoir in the source of water supply for these also. The largest pipe in the turret-nozzle system is 8 in., and the



Minneapolis Yards—General Arrangement of Storage Yard, Showing Location of Monitors and Water Piping

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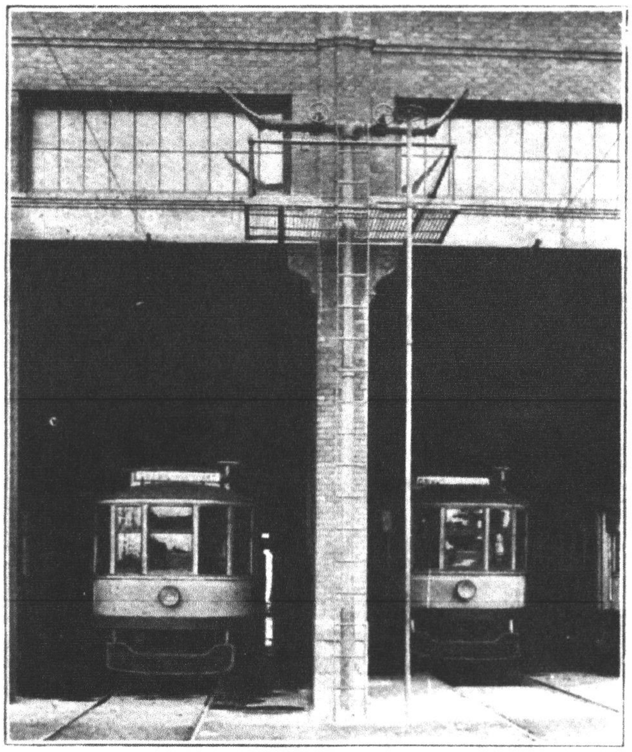
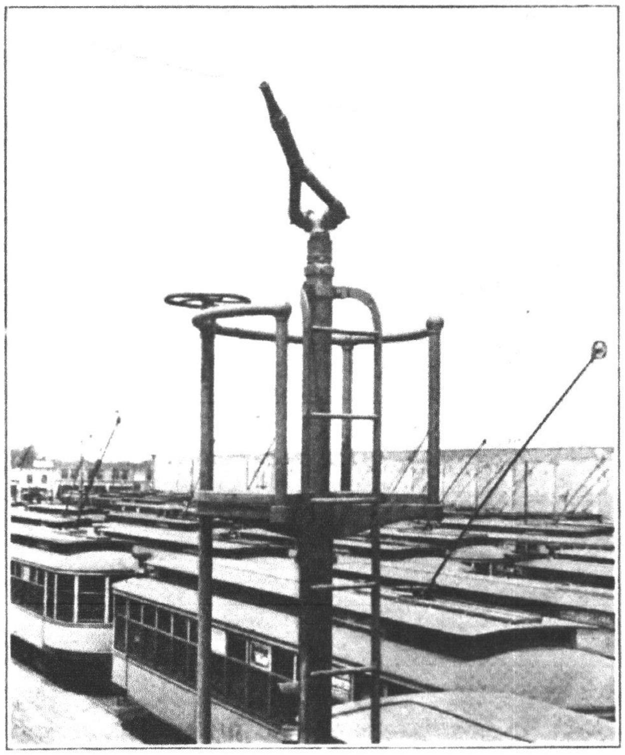
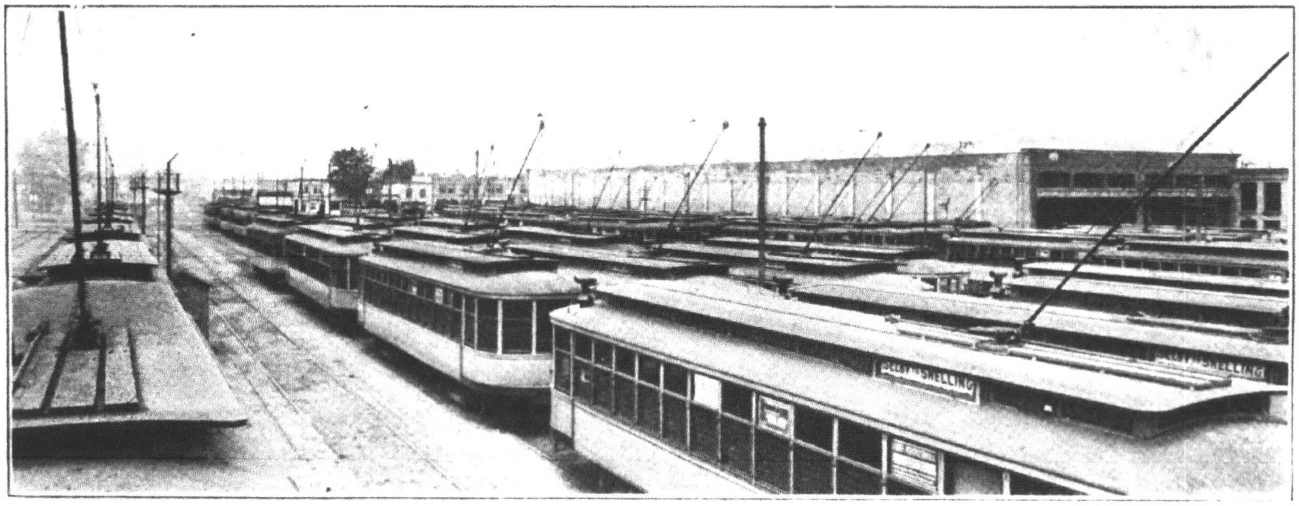
inlet to the supply tank is 8 in., the engineers in designing the protection system finding that the supply from the city mains at 33 lb. pressure would furnish sufficient water to maintain a pressure of 110 lb. on the turret mains when eight nozzles were in service.



Minneapolis Yards—Double Nozzle Turret



Minneapolis Yards—Single Nozzle Turret



Minneapolis Yards—General View Showing Location of Turrets

By installing a separate system of piping to serve the fire-protection turrets, which is shown as the dotted line in the plan, pressure is maintained by a small triplex pump which operates automatically whenever the pressure falls on account of leakage in the mains. When one of the monitor valves is opened in case of fire, however, the small pump is unable to maintain the pressure, and when it drops below 60 lb. one or both of the 1000-gal. per minute pumps are cut in automatically. These raise the pressure to 110 lb. on the mains and maintain it at that point when as many as eight nozzles are in service.

In addition to the two 1000-gal. stationary fire pumps with a capacity for supplying eight turret nozzles, a precaution was taken whereby all nozzles could be used at this pressure if necessary by installing two steamer connections, one near the University Avenue connection to the city water main and the other near the Snelling Avenue connection. These steamer connections were comparatively inexpensive, and with two steamers assisting the two fire pumps all nozzles may be in service at one time.

Water supply for fire-protection purposes has been carried throughout the storage yard and shop grounds which adjoin them, with hydrants spaced at approximately 300-ft. intervals. The mains serving the hydrants are connected direct to the city mains, independent of the turret-nozzle system. The two pipe systems were kept separate on account of the different pressures and because a failure in the mains to the hydrants would cripple the turret-nozzle system.

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Recent Repair Shop Improvements at Minneapolis

The Twin City Rapid Transit Company Has Recently Constructed Several New Shop Buildings, Thus Completing the Original Layout Which Was Planned Nearly Seven Years Ago—A Description of the New Structures Is Given, Together with Notes Upon Present Shop Practices

As is generally known, the Twin City Rapid Transit Company builds all of its regular and special cars. This practice was begun fifteen years ago and has been continued partly because the company believes there is a saving in so doing and partly because it enables the cars to be repaired by the workmen who originally constructed them. This is thought to result in efficiency and economy.

The shops are located on Snelling Avenue between University Avenue and St. Anthony Avenue and cover an area of about 30 acres. These shops have been described in considerable detail in previous issues of the ELECTRIC RAILWAY JOURNAL,* but since the last of these articles was written extensive improvements have been made, the most important of which are the construction of a new structural shop and an oil house and the rearrangement which has resulted therefrom. This work is now about finished, and it practically completes the original plan laid out nearly seven years ago. The general view which is published on this page was taken just before the construction of the structural shop was begun. The new shop occupies the vacant space in the foreground at the right of the picture. The diagram of shop layout shows the relation of the buildings forming the group.

Twin City Shop Improvements—Panoramic View of Snelling Avenue Shops

The new forge and structural shop is 200 ft. x 120 ft. in dimensions with light structural steel frame and brick walls. The height is 29½ ft. from the ground to the top of the nearly flat roof. This roof was made light in weight to save expense and avoid the effects of vibration. It consists of pine planking 1¾ in. thick covered with five-ply paper and tar and gravel. The floor is a 1½-in, layer of asphalt mastic laid on a concrete foundation. The composition is 65 per cent gravel, rock and bank sand and 35 per cent mastic and flux. In order to avoid sponginess it was put down hot and thoroughly troweled. This type of floor is practically paving concrete. If it proves satisfactory, it will be used in other parts of the shops to replace cement concrete, wood and cast-iron floors, none of which is able to withstand long the severe wear and tear of shops in which heavy work is handled.

The new building is divided into two equal sections, one for forge, the other for structural work. In these the present tools have been placed in their permanent positions, which were planned to insure most economical handling of work. This leaves, at present, large floor spaces unoccupied. This is all provided, however, in accordance with a definite scheme, and as each new machine is added it can be placed effectively without serious disturbance to the previous equipment. Between the two sections is a small two-story building which contains the tool rooms, offices and wash and lunch rooms. While, at first sight, a building within a building strikes one as novel, the arrangement is logical. The interior building is accessible from all parts of the shop. The walls keep out noise and dirt and the large windows furnish ample light and a view of all parts of the building. The building is not carried up to the shop roof because two floors give all the space needed.

The arrangement of the tools is such as to facilitate the efficient handling of all structural steel needed for bridges, viaducts, buildings, all power station and substation steel construction, truck frames, car frames, tanks, boilers, in short, practically every kind of steel work. In the old shop which was replaced by this new one 1400 tons of steel work were handled in a year. The capacity of the new shop is much greater than this. To serve the tools economically a double system of cranes has been installed, a 20-ton traveling crane for the structural shop and individual 2-ton jib cranes of original design for all heavy tools. A second traveling crane will be installed later in the forge shop. The jib cranes take care of a large part of the lifting, leaving the large crane free for the heavy work and long-distance moving. The large crane is electrically equipped.

THE OIL HOUSE

The new oil house, while less pretentious than the forge and structural shop, is nevertheless an important addition to the plant. The building is 160 x 50 ft., with a basement under one end. Architecturally it conforms in style to the

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*See particularly Vols. XXVIII, page 100; XXX, page 318; XXXII, pages 744, 890; XXXV, page 937; XXXIX, page 543.

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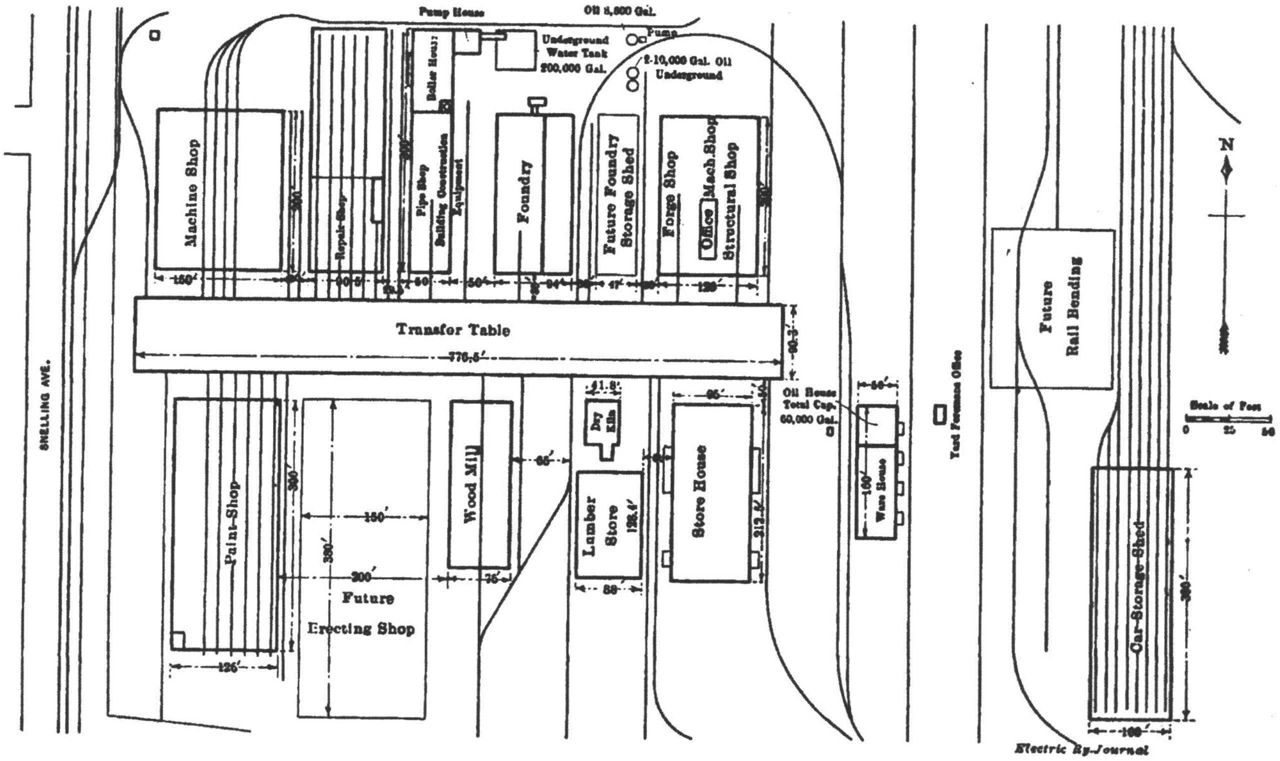
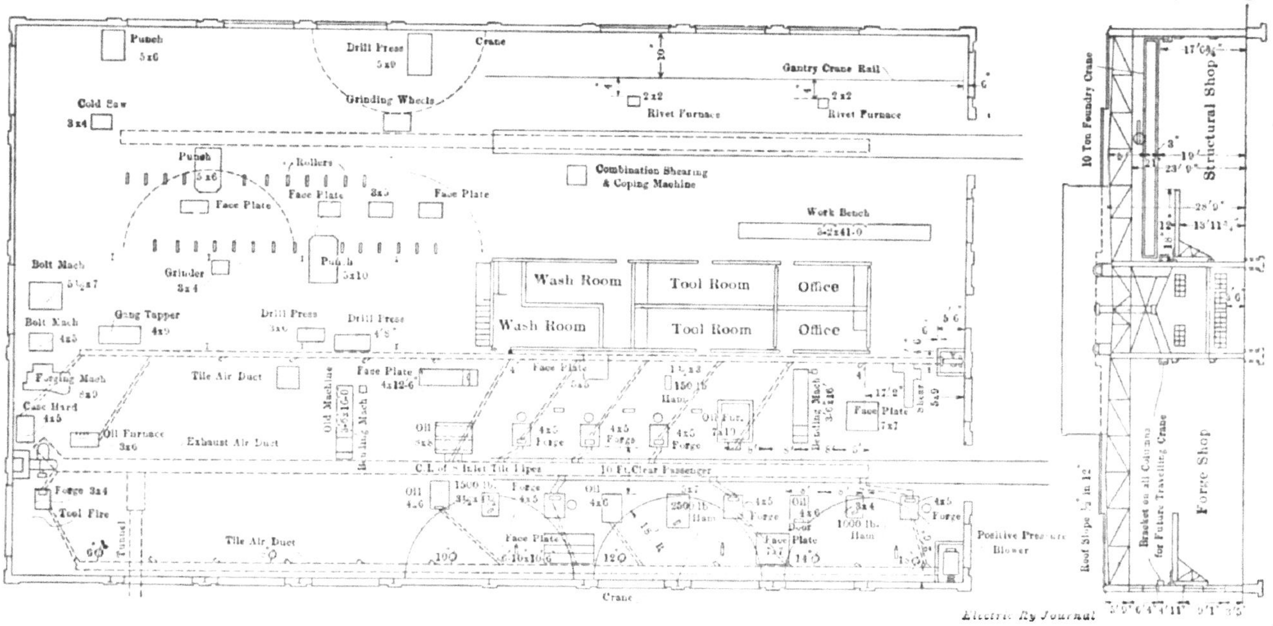
group of buildings of which it forms a part. Only a third of the building is at present required for oils and waste, the rest being used for storage of track and line supplies. The oil tanks are compactly placed in the basement and will eventually comprise six of 10,000-gal. capacity each for car oil, turpentine and gasoline; four of 2000-gal. capacity for kerosene, engine oil and compressor oil; six of 500-gal. capacity for benzine, signal oil, engine oil, car oil and automobile oil, and eight of 250-gal. capacity for brake oil, germicide, alcohol, lard oil and castor oil. Directly over the tanks are power and hand pumps with cast-iron catch basins. Bins for several car loads of waste are also located in this pump room.


Pump House
Oil 8,000 Gal.
Underground Water Tank 200,000 Gal.
Pump
2-10,000 Gal. Oil Underground
Boiler House
Machine Shop
Repair Shop
Pipe Shop
Building Construction Equipment
Foundry
Future Foundry Storage Shed
Forge Shop
Office
Mach. Shop
Structural Shop
N
Transfer Table
376.5'
SNELLING AVE.
Paint Shop
Future Erecting Shop
Wood Mill
Dry Kiln
Lumber Store
Store House
Oil House Total Cap. 60,000 Gal.
Waste House
Yard Foreman's Office
Future Rail Bending
Car Storage Shed
Scale of Feet
0 25 50
Electric Ry. Journal

Twin City Shop Improvements—General Layout Showing Location of New Shops


Punch 5x6
Drill Press 5x9
Crane
Gantry Crane Rail
Grinding Wheels
Cold Saw 3x4
2x2 Rivet Furnace
2x2 Rivet Furnace
Punch 5x6
Rollers
Face Plate
Face Plate
8x5
Face Plate
Combination Shearing & Coping Machine
Work Bench
Bolt Mach. 5½x7
Grinder 3x4
Punch 5x10
Bolt Mach 4x5
Gang Tapper 4x9
Drill Press
Drill Press
Wash Room
Wash Room
Tool Room
Tool Room
Office
Office
Forging Mach 8x9
Case Hard 4x5
Tile Air Duct
Face Plate 4x12-6
Old Machine
Bending Mach
Oil Furnace 3x6
Exhaust Air Duct
Oil Fur.
4x5 Forge
4x5 Forge
4x5 Forge
150 lb. Ham.
Bending Mach
Face Plate 7x7
Shear 5x9
C. L. of 8 Inlet Tile Pipes
10 Ft. Clear Passenger
Forge 3x4
Tool Fire
Tunnel
Tile Air Duct
Oil 4x6
1500 lb.
Forge 4x5
Oil 4x6
2500 lb. Ham.
4x5 Forge
Oil 4x6
Door
3x4 1000 lb. Ham.
4x5 Forge
Face Plate
Face Plate 7x7
Positive Pressure Blower
Crane
10 Ton Foundry Crane
Structural Shop
Roof Slope ½ in 12
Bracket on all Columns for Future Travelling Crane
Forge Shop
Electric Ry. Journal

Twin City Shop Improvements—Plan and Cross-Section of Forge and Structural Shop

The completion of the new buildings greatly relieves congestion in the former smith shop and storehouse. The pipe shop will continue to occupy part of the old smith shop, and the building department will occupy another part of it.

CAR DESIGN

There are but two types of car which are standard with the company. One is known as the older type and is 8 ft. 6 in. wide, with wood underframe. The other is 9 ft. 1 in. wide with steel underframe. The latter is lighter, stronger and has more area of glass in window sash. Since manufacturing was begun there has been a constant effort to reduce car weight. The last car turned out, 46 ft. 8 in. x 9 ft. 1 in., weighed, complete with storm windows, sand in

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boxes, water in heating system and coal in bin, 42,100 lb. actual scale weight. The type built eighteen months earlier weighed 46,200 lb., and that of a few years earlier 48,000 lb. The suburban type built eight years ago weighed 59,000 lb. These weights apply to cars seating forty-eight passengers, the standard seating capacity for all cars on the Twin City lines.

The lightening process has been carried on in all parts of the car and equipment. Wheels were reduced to 425 lb. for the 34-in. size, and these are scrapped as light as 310 lb. with a diameter of 31 in. Twenty-five pounds has been added recently as a concession to the manufacturers. Axles have been brought down to a minimum safe size with allowance for wear. A 2-in. hole from end to end eliminates 62 lb. of useless weight. Brake rigging and trucks have been lightened by the use of better steel and forgings, thus permitting smaller parts to be used. The greatest saving here was obtained by doing more machine work on castings. These have to be made larger than necessary for strength on account of foundry limitations, and 25 per cent or more can be machined off in many cases without danger. It was found also that steel bolsters could not be cast straight and uniform. These were therefore planed off with a saving of 150 lb. All parts of the bolster were at the same time made perfectly true. In the body all woodwork was made 1/16 in. thinner, and the steel underframes were lightened to the limit of safety. Even the grab-handles on the seat backs were trimmed down.

CAR CLEANING AND RENOVATING

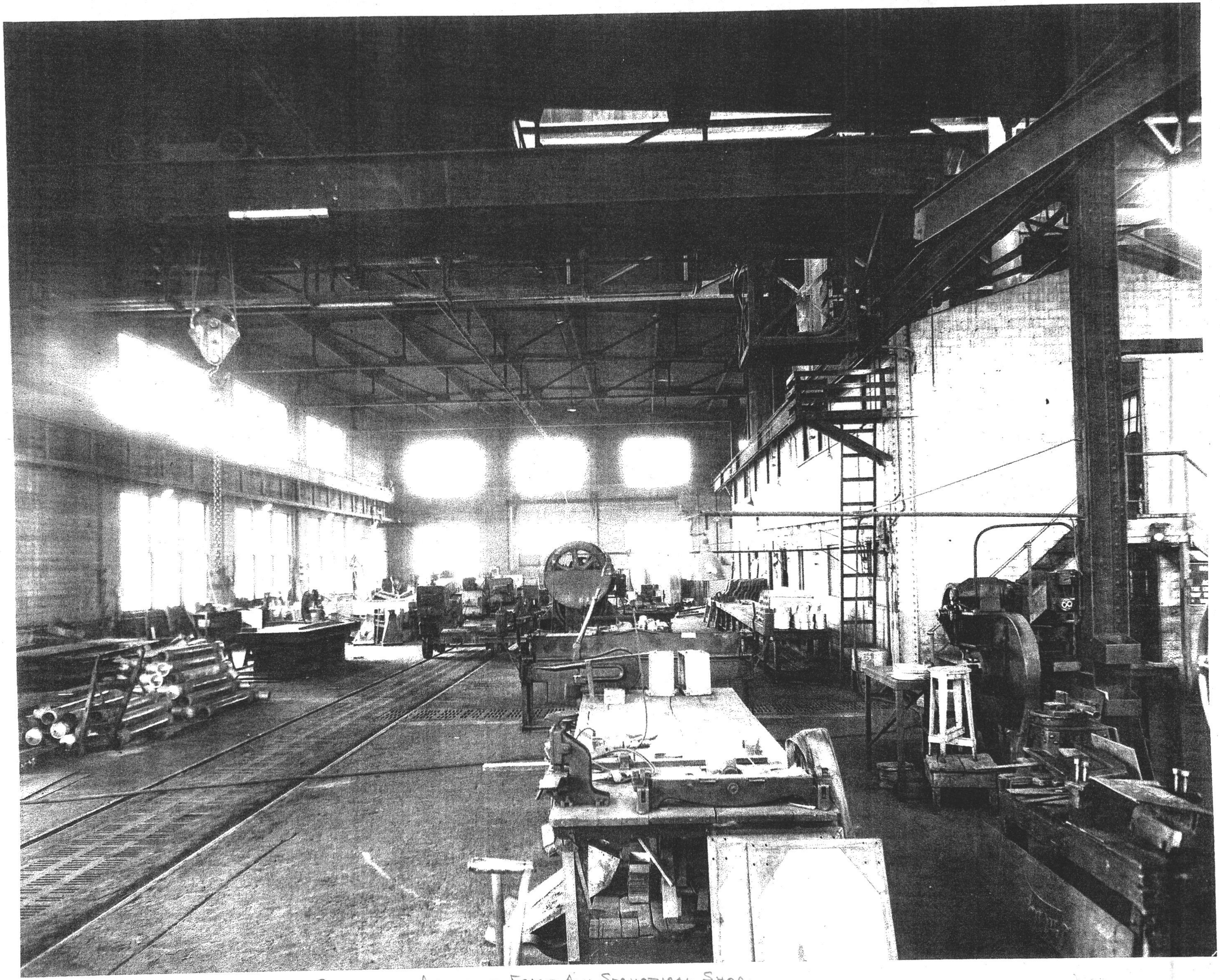
In regular maintenance, cars are now washed outside, and floors are swept daily with a careful wiping throughout. At nine-day intervals the floors are scrubbed. Every seventy days there is a thorough cleaning and hidden corners receive special attention. A thorough overhauling of the car body occurs every eighteen months for cars in heavy service and every four to five years for those in light service. During this process, which costs about $260 per car, new mastic flooring is placed on the platforms, the inside floors are patched or relaid, the seats are removed and refinished or replaced with new ones, new curtains, cushion covers, steps and gates are supplied if they are at all worn, and bell and battery boxes, push buttons and other fixtures are replaced. By being trimmed true and then having strips glued on all of the worn surfaces the sashes are made practically new. For window curtains, woolen terry has been found most satisfactory in the long run in spite of its high price.

Renovating the car exteriors includes a complete refinishing inside and out. Paint is burned off irregular surfaces and thoroughly smoothed off elsewhere. A new finish is then applied, the work requiring the car to be about fourteen days in the paint shop. When it leaves the shop with its fresh bright coat of light chrome yellow and aluminum bronze striping the car in appearance as well as in fact is as good as new. On an average thirty cars are kept in the main paint shop undergoing a thorough refinishing, while four more have the finishing touches added in an adjoining shop. This number keeps the force well occupied. All of the painting is done by piece work.

PAINT SHOP

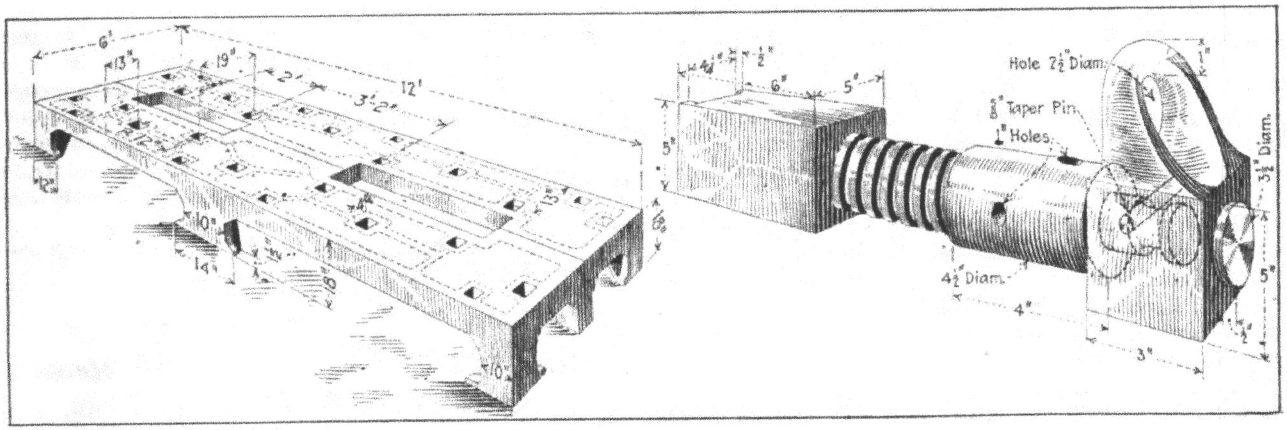
The paint shop, while not new, is a model of its kind. It is 300 ft. by 126 ft. wide and contains six tracks. One side, with a wide gallery, accommodates the carrying, sash finishing, glazing and other detail departments. Between and outside the tracks on the main floor are painting scaffolds of a type invented by G. L. Wilson, engineer maintenance of way, some years ago, and these have been found very convenient in practical operation. Nine-foot lengths of 4-in. wrought-iron pipes are set 10 ft. apart and 2½ ft. deep in cylindrical concrete foundations, 20 in. in diameter and 2 ft. 10 in. long. On the pipes are mounted cast-iron sleeves from which project brackets with extension sections. The sleeves are clamped to the standards by means of set screws. The brackets and planks spanning them are counterweighted by weights inside the pipes connected with the brackets by chains passing over pulleys mounted in housings on the top of the standards. This arrangement permits a quick adjustment of the scaffolding and leaves the floor practically clear. It is substantial enough to eliminate danger to the workmen from breakdown.

The paint shop is lighted partly by incandescent lamps in wall sockets placed directly on the concrete columns a few feet from the floor. The conduits are molded in the column so that no wiring is visible, and each lamp is protected by two strap-iron arches crossed at right angles.



Structural Portion of Forge And Structural Shop.

thoroughfares and their grooves are much narrower than those found in this country. Evidently flange wear does not worry the British engineers very much. There has always been a great amount of controversy over the question of comparative merits of the plain girder (high-T) and the groove girder rail for use in paved streets. As a matter of fact either can be used satisfactorily as far as car operation goes and pavement can be installed with plain girder rails in such a manner as to be unobjectionable to teamsters. Some engineers claim a lesser wheel flange wear obtains with plain girder rails, while others will say that this is more than offset by the lesser paving maintenance costs with groove girder rails. It will also be argued that a groove girder rail of proper design may weigh 122 lb. per yard where a plain girder of ample capacity for the same loads will not weigh over 91 lb. The price per ton is the same for both, hence the plain girder will cost less per foot of track. The writer is satisfied, from the results of a 5 year test of the two under equal conditions in the same street, that the groove girder rail is the proper one for use in narrow streets of large cities under heavy steel-tired wagon traffic which is largely confined to the railroad pavement area. This opinion is based on wear of pavement alone, as found on the test section.



DETAILS OF FACE PLATE AND SCREW JACK FOR BENDING AND STRAIGHTENING SPECIAL WORK

When the plain girder (high-T) rail can be used in small cities and towns or in localities where wide streets permit the wagon traffic to spread out and keep away from the tracks, there is an increasing tendency toward the use of standard section (low-T) rails weighing 100 lb. per yd. and of a depth of about 6 in. These rails can be purchased at prevailing prices for standard section rails which are much less than the prices for plain girders (high-T). This is an important point to be considered in rail selection, especially in these days of high cost. Incidentally the 6 in.-100 lb. low-T rail will admit the use of quite a number of pavements which are suitable for moderate traffic.

CONSULT ASSOCIATION STANDARDS WHEN SELECTING RAILS

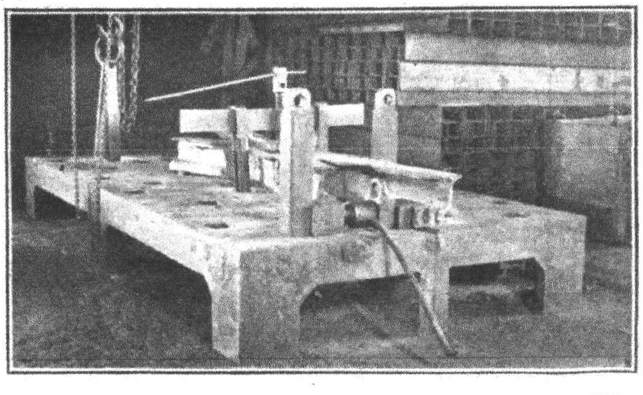
Having reached a decision as to general type and approximate weight of rail desired for some particular service, there remains the proper section to be selected. In this connection it should be the rule first to consult the standard rails approved as standard or recommended design by the American Electric Railway Engineering Association as found in the Engineering Manual. These rails were illustrated in the JOURNAL for July 19, 1919, and there is no question but that there should seldom be occasion for the adoption of a section other than some one of these. The principal exception would be in the case of need for a groove girder rail to provide for M.C.B. wheels. Even here, the Association rails will pass M.C.B. flanges but a reasonable amount of head wear is not provided for.

Face Plates Aid Straightening and Bending Work in the Shop

Twin City Company Makes Up Equipment Which Proves of Great Convenience On Work Not Easily Handled by Bulldozer

THE Twin City Rapid Transit Company, Minneapolis, has made up several so called "face plates" for use in its shops in straightening and bending materials. These are very large castings made in the company's shops and they incorporate various devices such that almost any materials which cannot be easily handled with the bulldozer can be speedily and conveniently straightened or bent.

The largest of the plates measures on the top surface 6 ft. x 12 ft. and is made up of two matched castings each 3 ft. x 12 ft. The top surface of the plate is 18 in. above the floor. This plate is used especially for straightening special work, practically all of that used on the property being cast in the company shops. In cooling this will often get a little out of true and by properly locating dowel pins in the holes in the face plate and applying screw jacks to the bent parts the



TAKING OUT HORIZONTAL AND VERTICAL KINKS SIMULTANEOUSLY IN A PIECE OF SPECIAL WORK

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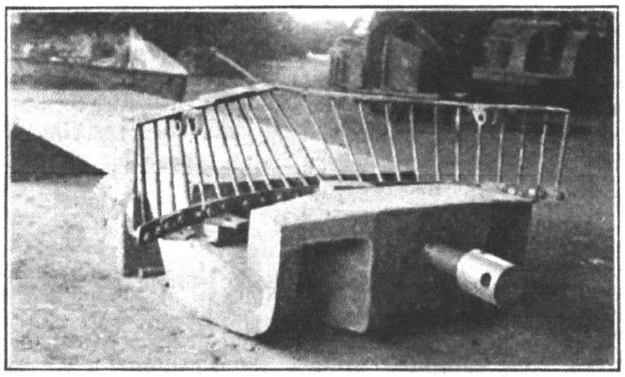
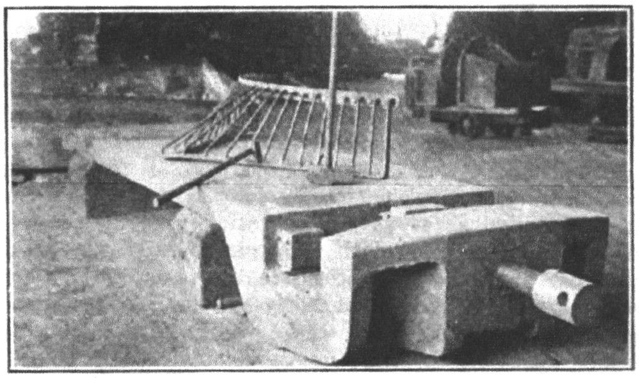


FACE PLATE FOR BENDING AND STRAIGHTENING WITH OR WITHOUT FORMS



HAMMERING OUT SURFACE KINKS AND IRREGULARITIES ON THE FACE PLATE

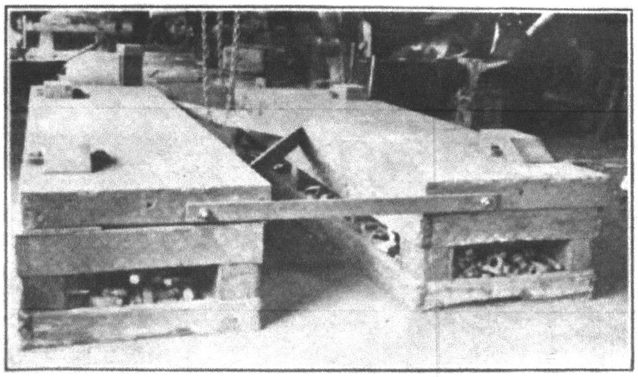
work can be made true. The accompanying drawing shows the dimensions of this plate, the location of the dowel pin holes, the dowel pins and the type of screw jack used.

Before bending, the portions of the special work which are out of true are heated over an oil furnace located beside the face plate. The piece of special work is then swung onto the plate by means of a Duplex 4-ton screw block crane, the dowel pins, jacks and other equipment are placed in the proper position and pressure is applied. Either horizontal or vertical bends can be made or, as in the illustration shown, both can be applied at once.

There is sometimes occasion for straightening parts of car bodies bent by accidents or for bending new work where templates are needed or otherwise, which cannot conveniently be handled by the bulldozer. For such purposes the face plate shown in another illustration has been made. This plate is 12 ft. 6 in. long, 3 ft. 4 in. wide and stands 18 in. from the floor. The gap is 16 in. wide and 8 in. deep and because of the location of the screw and end section has been made 19½ in. high at the center and 10 in. thick. The 3-in. diameter screw with three threads to the inch threaded into a 5-in. square block flanged on the gap side 6½-in. square.

The piece to be bent is placed in the gap in a similar position to the fender which is being straightened as shown. Pressure is applied by means of the screw and block. After the piece has been formed any surface kinks can be removed or other hammering done on the plate, as shown.

Another plate shown has been made for use in shaping and welding truck frames. The frames are first bent in the bulldozer but in cooling will become slightly untrue. The blocks on this plate are of such shape and so located that the frames can be brought true. The ends are then hammered out flat and the cross members are welded in place. The frame is complete when removed from the plate.



SPECIAL DESIGN OF FACE PLATE FOR SHAPING AND WELDING TRUCK FRAMES

As indicated in the photograph this plate is composed of two castings 3 in. thick, increased to 4½ in. at the rims, 31 in. wide and of such length and so spaced from each other as to accommodate the truck frame. The plates are set up on a framework which forms bins for the tools. The blocks for shaping the frame can be changed in location to suit the different sizes of frames made by this company.

All of these plates have proved to be a great convenience in the Twin City shops.

Heat Treating Tools In the Tool Room Instead of In the Blacksmith Shop

THE heat treatment of tools came up for a prolonged discussion at the American Railway Tool Foremen's Association convention held in Chicago, Aug. 27, 28, and 29. All members appeared to be in accord as to the desirability of treating tools for service in strict accordance with the recommendation of the manufacturers of the material from which the tools were made. The members also considered that the control of the operation of heat treating tools should be vested in the foreman of the tool department rather than in the blacksmith shop, as has been the usual practice. The tool foreman is responsible for the behavior of these tools in his shop and it is natural that he should be most vitally interested in the result obtained. In modern tool rooms there is frequently available equipment which will greatly facilitate this work in the nature of electric furnaces and tempering baths with their accompanying pyrometers, so that results can be obtained with accuracy not available in the ordinary forging plant.

The steam railroads are preparing for a national railroad accident-prevention drive, from Oct. 18 to 31, under the auspices of the safety section, division of operation, United States Railroad Administration. The steam railroads are making excellent progress in the campaign for reducing the casualties in their field and safety supervisors all over the country are making elaborate preparations to make the most of the enthusiasm which will be engendered by this special drive.

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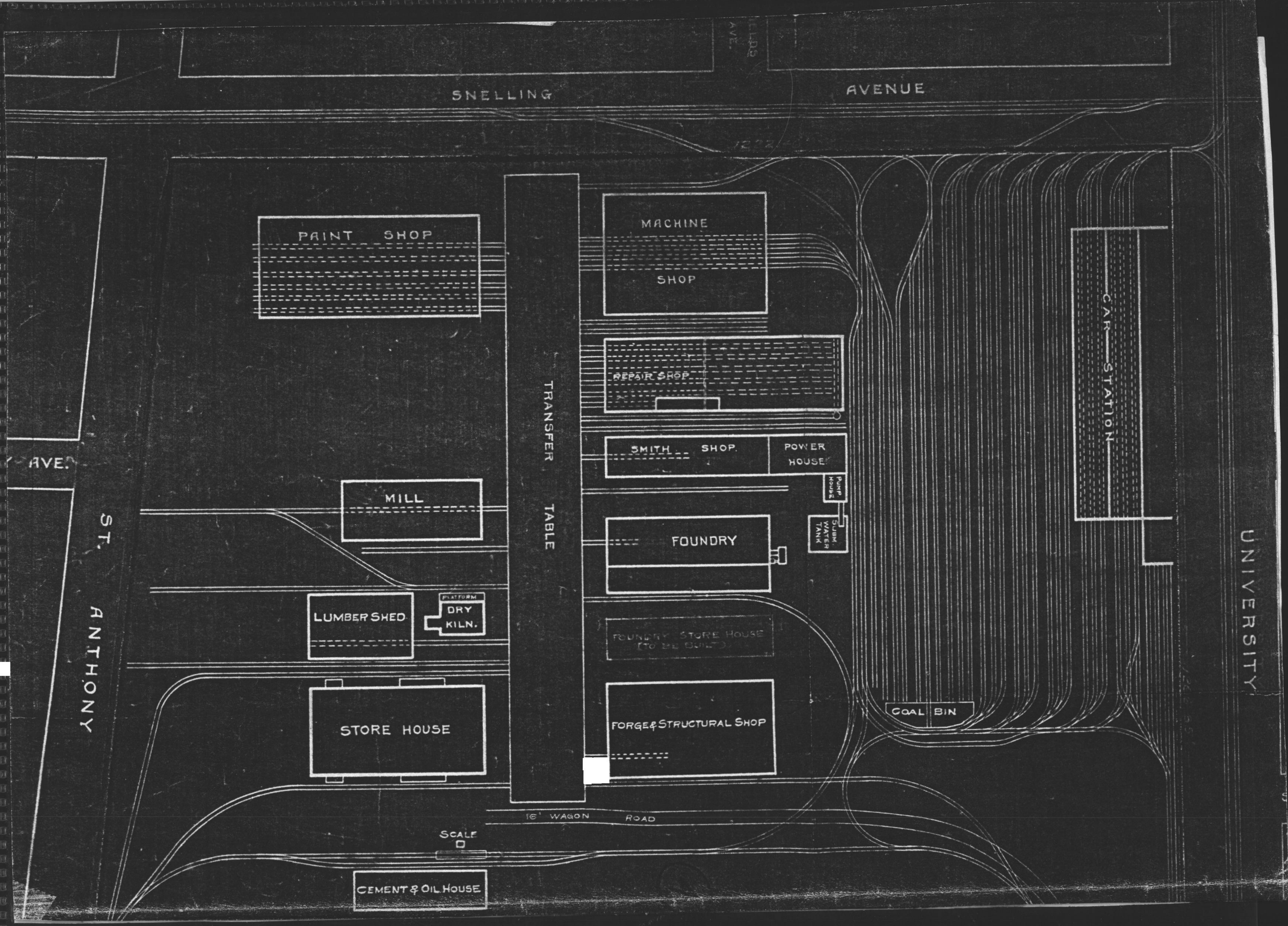
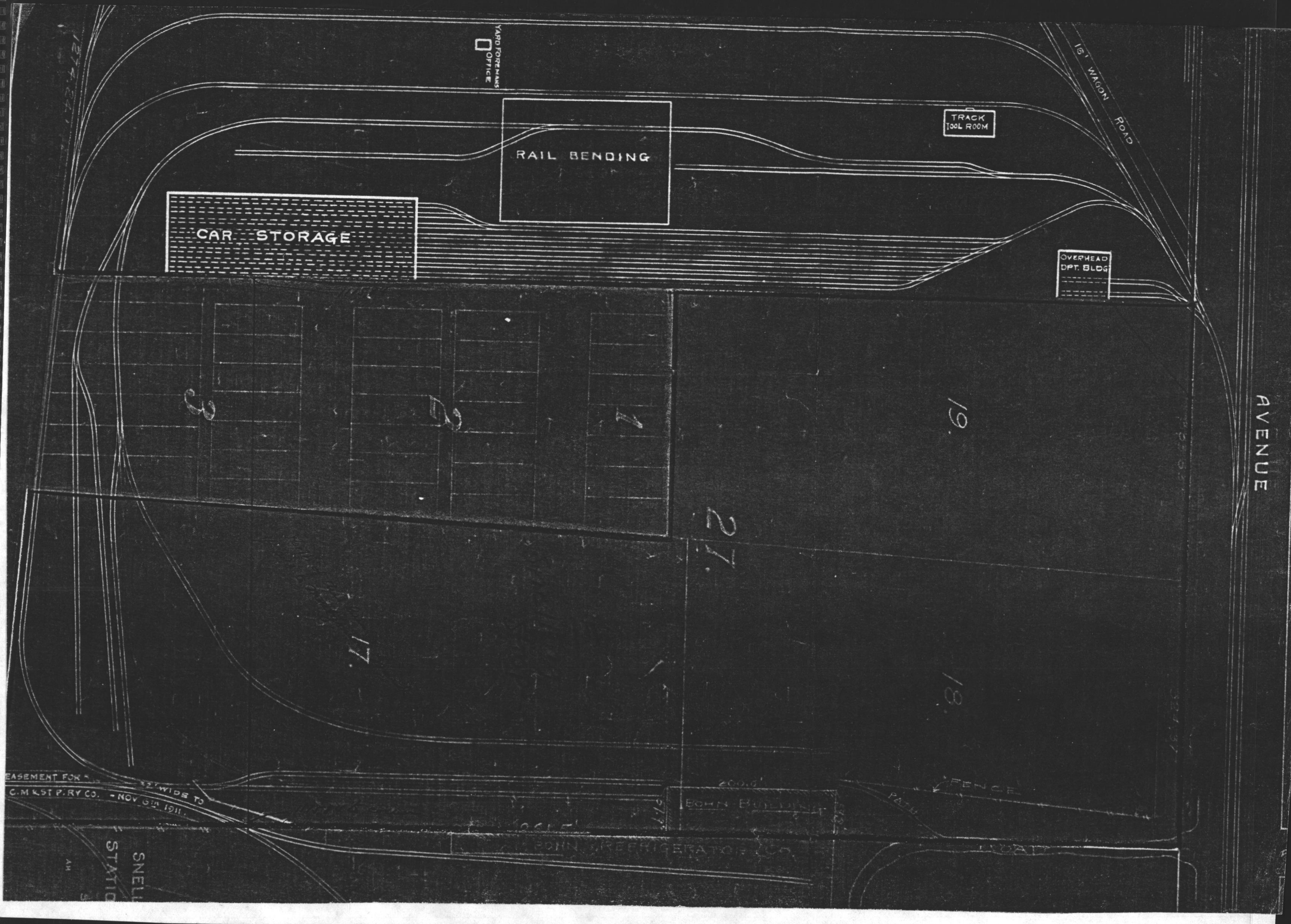
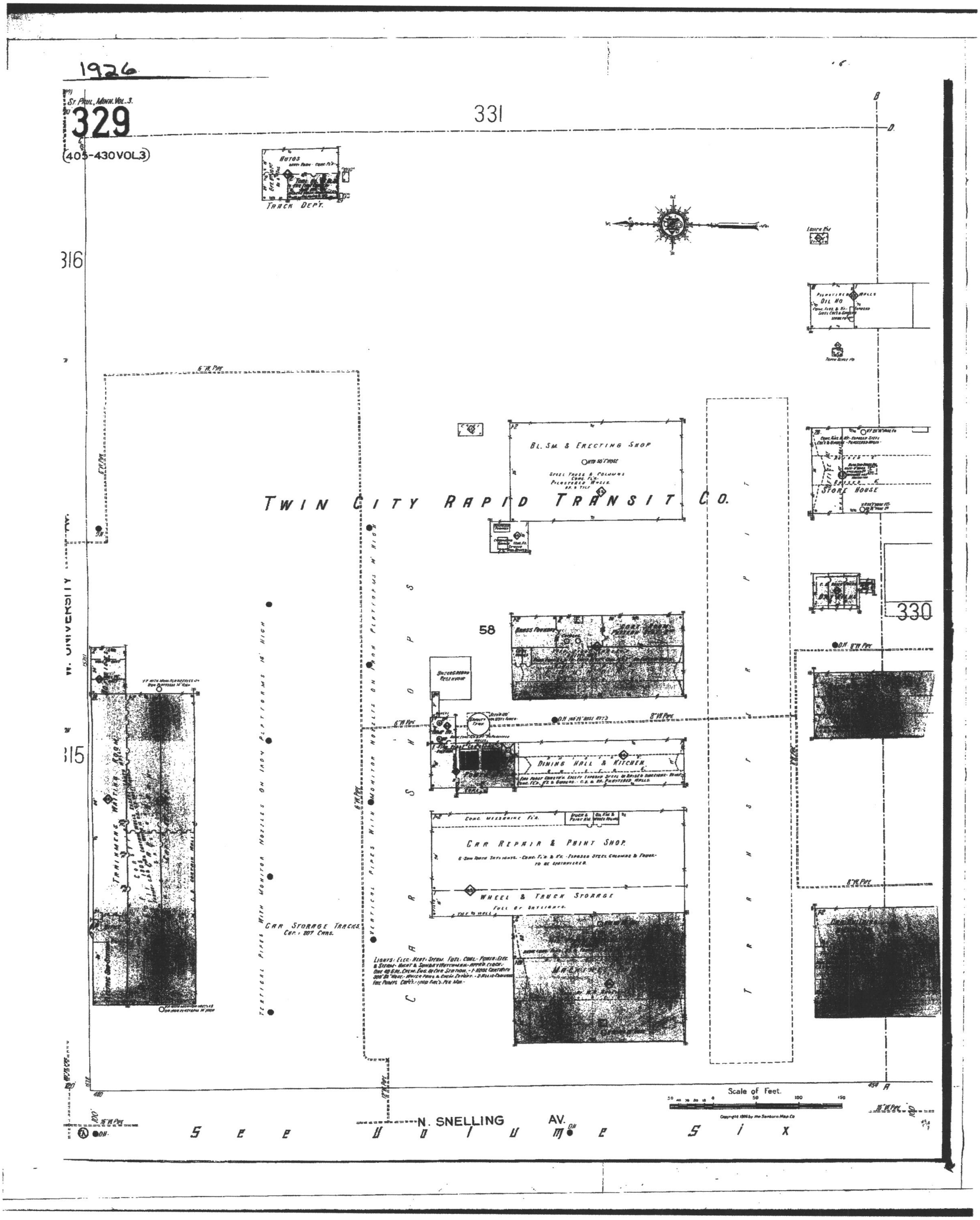

SNELLING
AVENUE
AVE.
AVE.
PAINT SHOP
TRANSFER TABLE
MACHINE SHOP
REPAIR SHOP
SMITH SHOP.
POWER HOUSE
PUMP HOUSE
SUBM. WATER TANK
CAR STATION
MILL
FOUNDRY
PLATFORM
DRY KILN.
LUMBER SHED
FOUNDRY STORE HOUSE (TO BE BUILT)
ST. ANTHONY
UNIVERSITY
STORE HOUSE
FORGE & STRUCTURAL SHOP
COAL BIN
16' WAGON ROAD
SCALE
CEMENT & OIL HOUSE


1274.24
YARD FOREMANS OFFICE
RAIL BENDING
TRACK TOOL ROOM
1ST WAGON ROAD
CAR STORAGE
OVERHEAD DPT. BLDG
AVENUE
3
2
1
19.
27.
17.
18.
EASEMENT FOR 32' WIDE TO
C.M.&ST.P. RY CO. - NOV 6TH 1911.
200.0'
BOHN BUILDING
FENCE
PATH
BOHN REFRIGERATOR CO.
ROAD
STATIO
SNELL

1926


St. Paul, Minn. Vol. 3.
329
(405-430 VOL 3)
331
316
315
330
Twin City Rapid Transit Co.
Track Dept.
Autos
Bl. Sm. & Erecting Shop
Store House
Oil Ho.
58
Brass Foundry
Underground Reservoir
Dining Hall & Kitchen
Car Repair & Paint Shop
Wheel & Truck Storage
Trainmen's Waiting Room
Car Storage Tracks Cap. 807 Cars.
Car Shops
Transfer Pit
Vertical Pipes with Monitor Nozzles on Iron Platforms 16' High
6" W. Pipe
8" W. Pipe
12" W. Pipe
16" W. Pipe
W. University Av.
N. Snelling Av.
See Volume Six
Scale of Feet.
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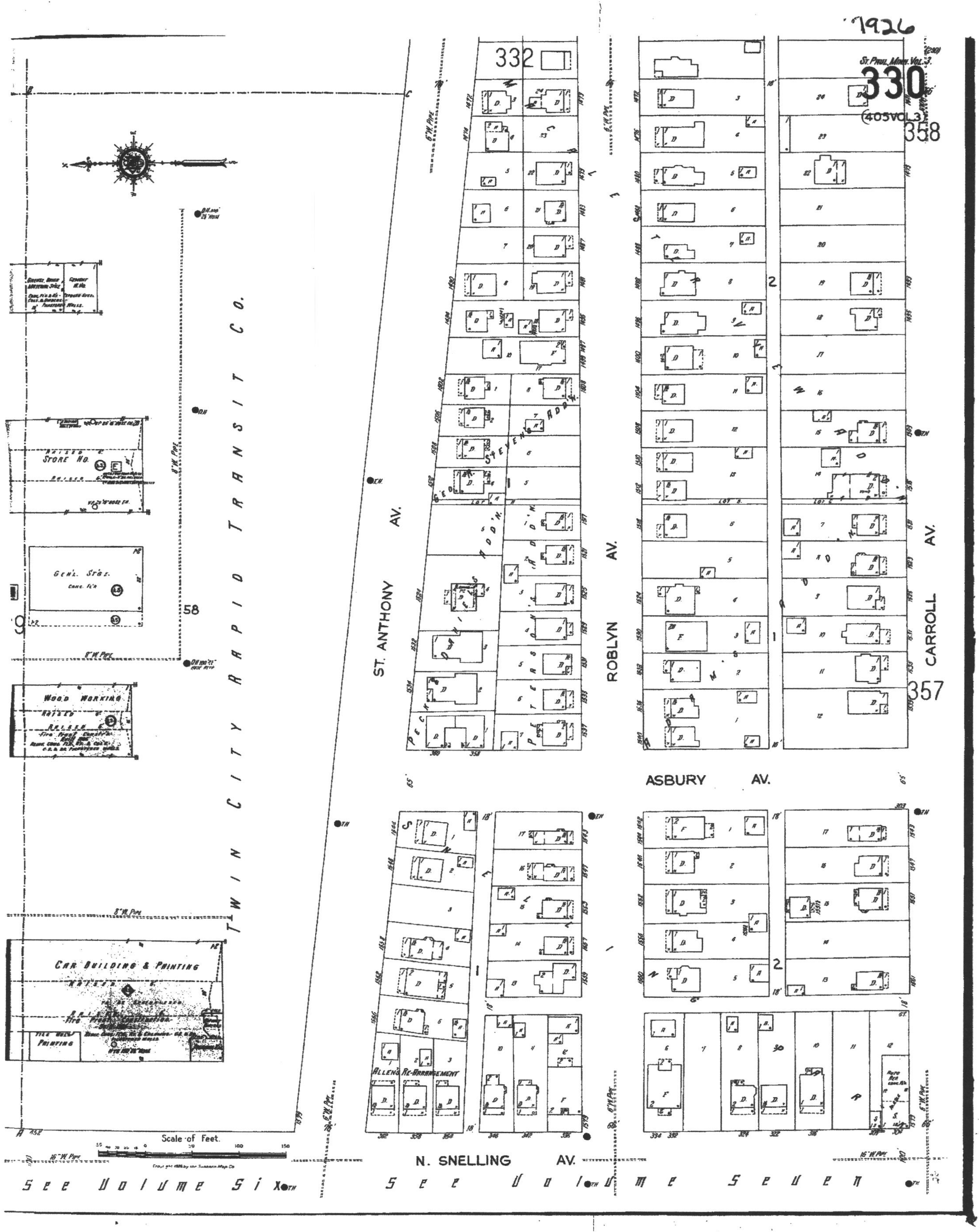
1926
St. Paul, Minn. Vol. 3.
330
(405 VOL.3)
358
357
332
58
9
TWIN CITY RAPID TRANSIT CO.
Genl. Bldg. Material Stg.
Cement W. Ho.
Raised
Store Ho.
Raised
Gen'l. Stg.
Conc. Fl'r
8" W. Pipe
Wood Working
Raised
Raised
Fire Proof Constr'n.
Car Building & Painting
Raised
Raised
Fire Proof Construction
File Hold
Painting
ST. ANTHONY AV.
ROBLYN AV.
CARROLL AV.
ASBURY AV.
N. SNELLING AV.
MERRIAM'S 2ND REARR.
Geo. W. Stevens Add'n.
Peck & Dunham's Add'n.
Peters Add'n.
Hamline Add'n.
Merriam's 2nd Rearr.
Allen's Re-Arrangement
Auto Rep.
6" W. Pipe
16" W. Pipe
Scale of Feet.
50 40 30 20 10 0 50 100 150
Copyright 1926 by the Sanborn Map Co.
See Volume Six
See Volume Seven

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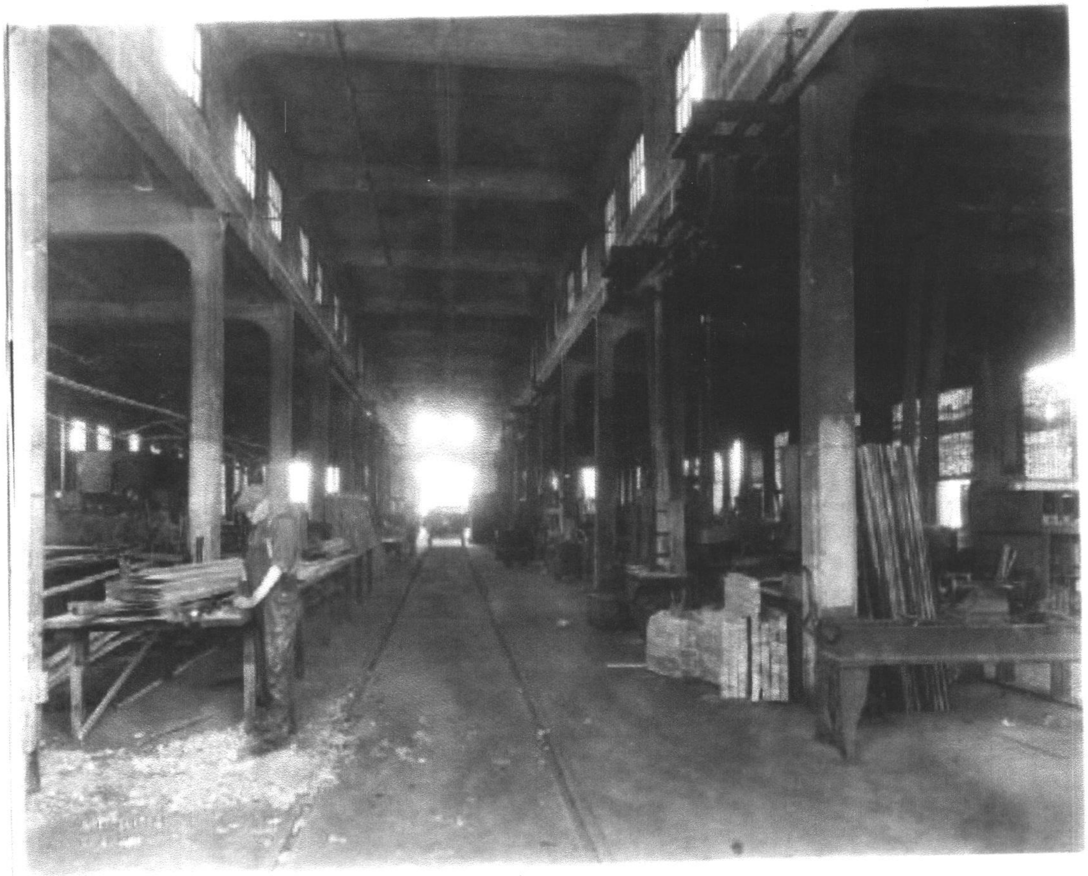
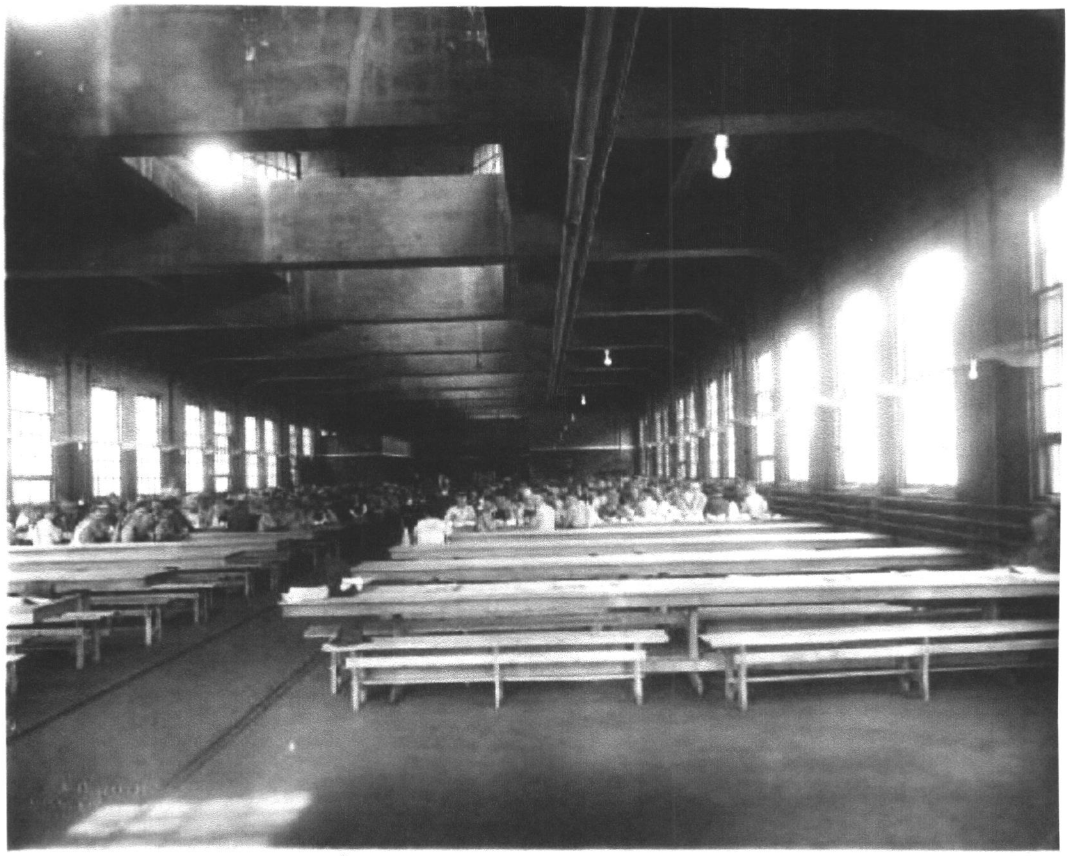
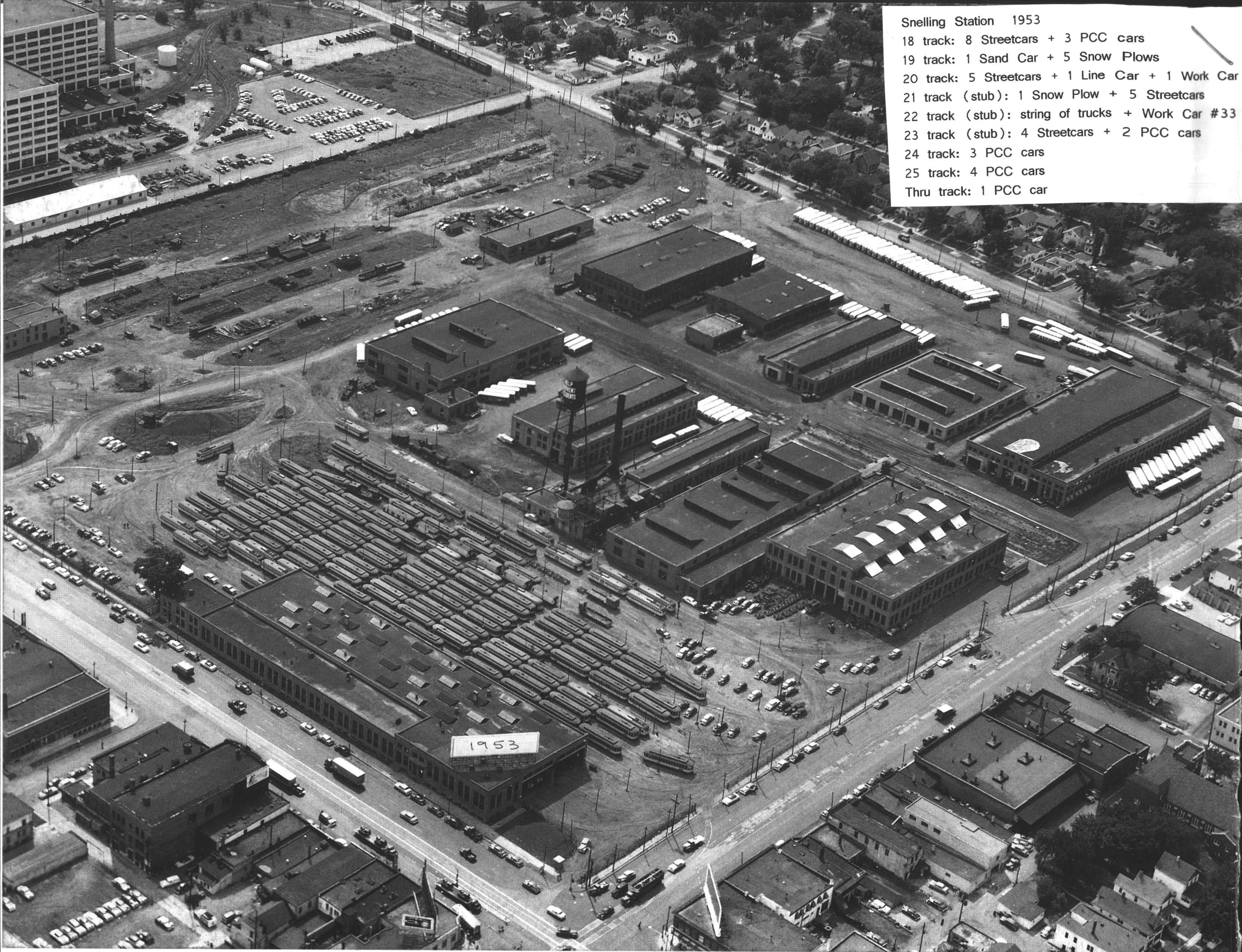


CARPENTER/ MILL SHOP



FORMER PIPE SHOP/ SMITH SHOP; NOW KITCHEN & LUNCHROOM



Snelling Station 1953
18 track: 8 Streetcars + 3 PCC cars
19 track: 1 Sand Car + 5 Snow Plows
20 track: 5 Streetcars + 1 Line Car + 1 Work Car
21 track (stub): 1 Snow Plow + 5 Streetcars
22 track (stub): string of trucks + Work Car #33
23 track (stub): 4 Streetcars + 2 PCC cars
24 track: 3 PCC cars
25 track: 4 PCC cars
Thru track: 1 PCC car

(Unnamed Divider)

MINNEAPOLIS ST. RY.
CARHOUSE TRACK
1-1-1916

Carhouse/Miscellaneous		Carhouse Tangent Track	Carhouse Special Track	Miscellaneous Track	Total Track
East Side Station		1.442 miles	.636 miles		2.078 miles
Lake St. Station		2.722 miles	1.541 miles		4.263 miles
Nicollet Station		1.800 miles	.994 miles		2.794 miles
North Side Station		1.925 miles	.896 miles		2.821 miles
Main Steam Station				.705 miles	.705 miles
University Substation	*	.027 miles	.092 miles		.119 miles
Johnson & 18th Sts. N.E.	#			.082 miles	.082 miles
Nicollet Ave. & 40th St.	#			.049 miles	.049 miles
R/W: Upton Av. to Xerxes Av.	#			.127 miles	.127 miles
R/W: France Ave. Loop	#			.038 miles	.038 miles
Totals		7.916 miles	4.159 miles	1.001 miles	13.076 miles

Mileage by Rail Type

Rail Type	East Side Station	Lake St. Station	Nicollet Station	North Side Station	Main Steam Station	Misc.	Total
7" 91# T		.532	.505	.053			1.090
5" 80" T		.185	.202	.577			.965
8" 79# T	.019					* .007	.026
7" 70# T			.172	.123			.295
6" 60# T		.056	.074	.030		* .011	.171
5 3/4" 60# T		2.231	1.063	1.348		* .010	4.652
56# T			.019				.019
50# T						* .017	.017
45# Grooved	.006						.006
40# T	1.436						1.436
38#/50# T						# .296	.296
6" 97# and 7" 108# Gr Gd	.617						.617
6" 97# Gr Gd		.730				* .075	.805
7" 108# Gr Gd		.529	.759	.690			1.978
80# ASCE					.240		.240
65# ASCE					.360		.360
60# ASCE					.091		.091
Switches ?					.014		.014
Totals	2.078	4.263	2.794	2.821	.705	.415	13.076

MINNEAPOLIS ST. RY.
CARHOUSE SWITCHES
1-1-1916

	Switches & Mates	Frogs	Split Switches	Stub Switches
East Side Station				
Tracks 1-12	14	17		
Tracks 13-26	18	27		
Lake St. Station				
West entrance	6	18		
West tracks 1-31	34	41		
East entrance	6	18		
East tracks 1-31	40	59		
Nicollet Station				
North entrance	3	7		
North tracks 1-19	21	26		
South entrance	6	15		
South tracks 1-19	21	26		
North Side Station				
South entrance	3	7		
South tracks 1-21	19	24		
North entrance	3	7		
North tracks 1-21	18	24		
University Substation	4	8		
Main Steam Station				
80# T rail			2	-
65# T rail			3	1

MINNEAPOLIS ST. RY.
St.PAUL CITY RY.
CARHOUSE AND MISCELLANEOUS TRACK
1-1-1922

Description	Tangent Track L.F.	Special Track L.F.	Total Track L.F.	Total Track Miles
Carhouse and Yard				
East Side Station	8781.6	3689.4	12471.0	2.362
Lake St. Station	15167.2	8789.8	23957.0	4.537
Nicollet Station	9452.9	5251.8	14704.7	2.785
ash track	136.5		136.5	.026
North Side Station	10163.6	4727.3	14890.9	2.820
University Ave. Substation (Elect. Dept.)	142.0	495.3	637.3	.121
Snelling Station	43519.4	12580.7	56100.1	10.625
Duluth Ave. Station	5711.9	7661.0	13372.9	2.533
Spring Park Carhouse (7 switches)	2189.0	948.6	3137.6	.594
Johnson St. N.E. & 18th St.N.E. dump track			434.4	.082
Main Steam Station			3544.2	.671
Fair Grounds loops and gravel pit	10159.2	3999.5	14158.7	2.682
St.Clair Ave. & Toronto St. dump track				.121
E. 7th St. & Victoria St. stone quarry track				.477
Prior & University Aves. M.T. Ry. connection				.013
Total				30.449

MINNEAPOLIS & St.PAUL SUBURBAN RAILROAD
Owen St. Station, Stillwater
1-1-1926

Tangent and curved track (35#, 56#, 78# Gr Gd, 5" 80# T)	667.8	.126
Special track	?	.081
Total track		.207

CAPACITY OF CAR STATIONS
1932

Station	Carhouse	Yard	Total
Nicollet	36 cars	122 cars	158 cars
East Side	153 cars	20 cars	173 cars
Lake St.	36 cars	144 cars	180 cars
North Side	36 cars	112 cars	148 cars
Snelling	42 cars	224 cars	266 cars
Duluth Ave.	12 cars	116 cars	134 cars
inspection & repair bldg.	6 cars		

(Unnamed Divider)

OFFICE BUILDINGS

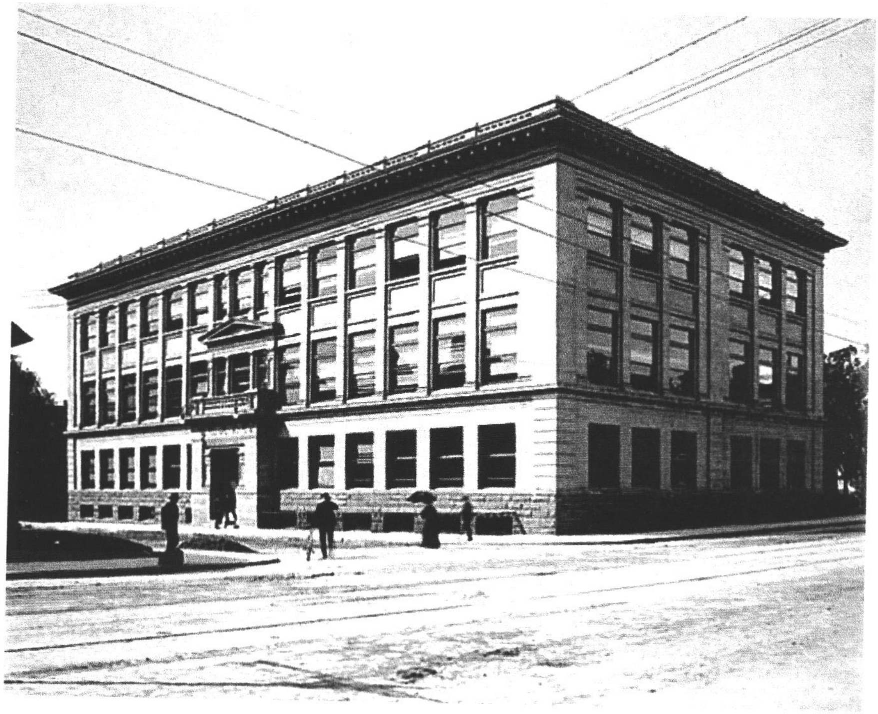
Two office buildings were constructed to similar designs, one in Minneapolis at 11th St. and Hennepin Ave., and the other in St.Paul at College Ave. and Wabasha St. Each building contained a substation. Each was constructed of pressed brick with terra cotta trimmings; roof and floors were of steel and concrete. Each building measured 80' x 150'. The Minneapolis building was three stories high (56') while the St.Paul building was two stories high (44'). Construction began in 1903 and was completed in 1904.

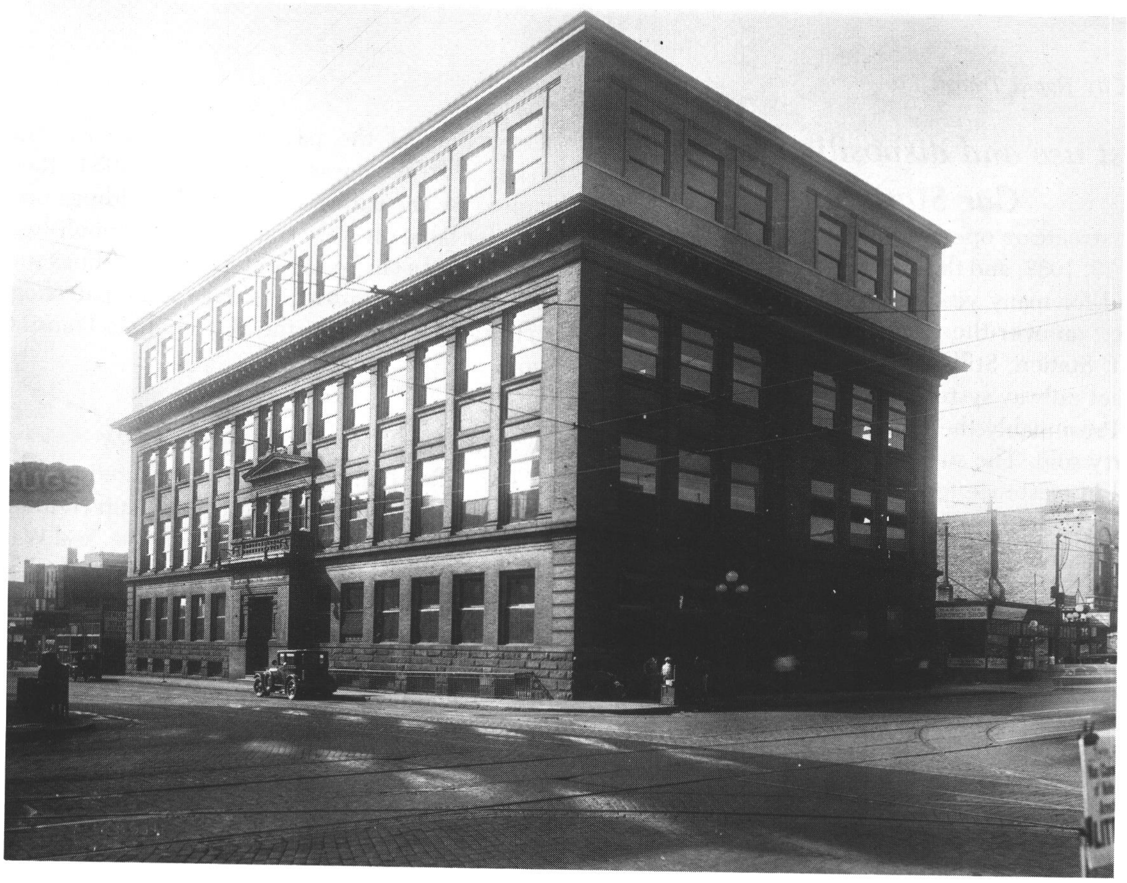
The Minneapolis offices were moved from 200 3rd Ave. N. to 1 S. 11th St. May 21, 1904. This building contained the offices of the Minneapolis St. Ry. as well as those of the Twin City Rapid Transit Co. and its other subsidiaries. The St.Paul building contained the offices of the St.Paul City Ry. A fourth floor was added to the Minneapolis building during 1925-1926.

(The Transit Supply Company's office and the Purchasing Agent's office were located in the Snelling Shops Storehouse building; the Master Mechanic's office was located in the Snelling Shops Machine Shop building, 406 N. Snelling Ave.)

1960?

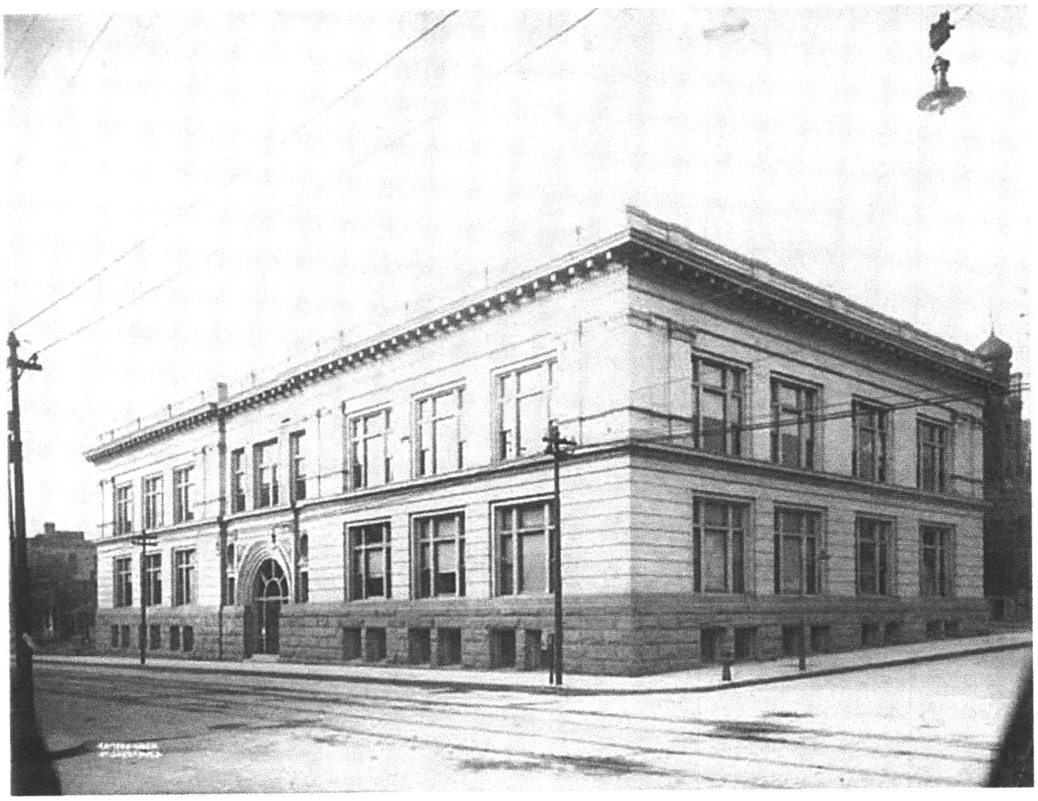
After the end of streetcar operations, the Minneapolis office building was demolished (in 1961) and the offices moved to the second floor of the former Nicollet Carhouse, now Nicollet Garage. The St.Paul office building was sold for continued existence as an office complex.



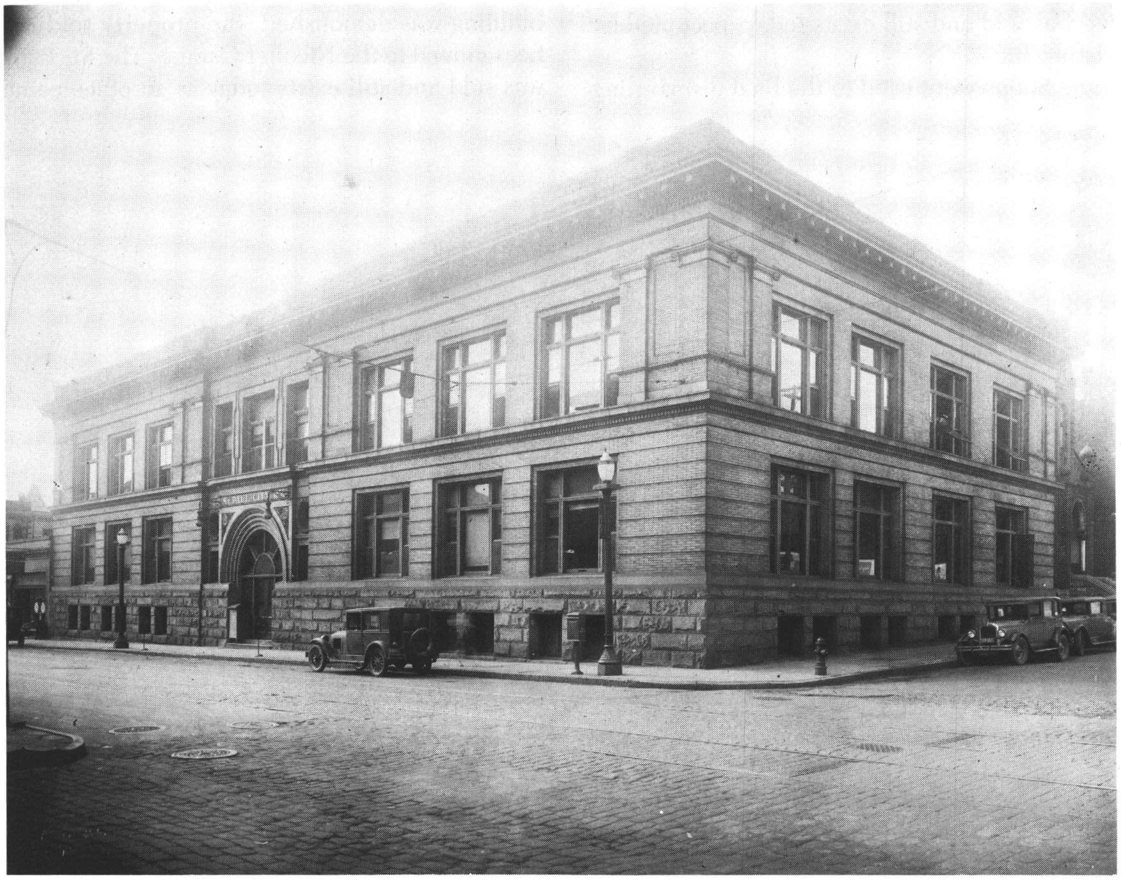


Above: The Minneapolis general office and substation building on the southeast corner of 11th St. and Hennepin Ave.

AVERY POLY-VU



Below: The St. Paul office and substation building on the west side of Wabasha St. at College Ave.



TWIN CITY RAPID TRANSIT CO.
MINNEAPOLIS ST. RY.
11th St. OFFICE & SUBSTATION

This was originally a three story building. The substation occupied the basement, first floor and second floor of the south one-half. The entire third floor was devoted to offices. A fourth floor was subsequently added. At the time of the Drum/Cappelen Valuation 12-31-1915 the building consisted of three stories.

- Basement West End:
  - Cable Room
  - Laboratory
  - Laboratory Machine Room
  - Blue Print Room
  - Mail Room
  - Janitors' Room
- First Floor
  - Substation
  - Room 100-108
  - Chief Clerk's Office
  - Lost Article Dept.
  - Room 102 and Hall
  - Room 106
- Third Floor
  - Suite 302 to 306 (apparently the president's office and directors' room)
  - Rooms 300 to 301
  - Room 303
  - Suite 305 and 315
  - Room 309-308
  - Suite 310 and 312
  - Room 312 (apparently the Track Dept.)
  - Law Library in Room 306
- Basement East End:
  - Transfer Room
  - Operating Dept. Vault
  - Auditing Dept. Storeroom
  - Substation Basement
  - Bus Bar Room
  - Wash Room
- Second Floor
  - Auditor's Vault
  - Auditor's Office
  - Room 202
  - Room 204

1945-1946

During the two summers I worked there, this was the situation. The main entrance was in the middle of the north side, leading to the First Floor. Immediately on the right (west side) was the Lost Article Dept., the elevator, and the Treasurer's Office and Department. On the left (east side) was the Schedule Dept. (Donald Goodrich, Assistant Treasurer. Harry W. Ralph, Superintendent of Schedules.) The substation occupied the south half of the building.

The Basement was essentially the same as indicated in the 1915 valuation.

The Second Floor was occupied by the Accounting Dept., north one-half, and the Substation, south one-half. Starting from the east end: Secretary and Comptroller's Office (Sibbald MacDonald); Assistant Comptroller's Office (E. M. Thomasberg); Bookkeeping facilities (G. R. Leasman, Bookkeeper); Accounting Dept. (Selby Nelson, Frank Lund, Frank Monson); and Payroll Dept. (Floyd Yerks).

The Third FLoor was all office space. I don't recall the exact arrangement. On the east end were the Legal Dept., Claim Dept. and Law Library. (O. L. McKenzie, Minneapolis Claim Agent.) On the west end were the Minneapolis Division Superintendent's Office (Luther C. Bakken), the General Superintendent's Office (F. R. Bjork) (both on the north side), the Employees' Mutual Benefit Association (Fred Anderson, Director), General Passenger Agent's Office (Robert J. Fitzsimmons) (both on the south side), and the Telephone Switchboard Room (there were three or more operators)(I don't remember which side of the building).

On the Fourth Floor the entire east end comprised the executive offices. Centrally located was Executive Assistant/Assistant Secretary (Daniel J. Bren). On the north side were the Vice Presidents' Offices (Burton G. Noah, Vice President; Jefferson L. Alexander, Vice President in Charge of Operations). On the south side were the President's Office (D. J. Strouse) and the Board of Director's Room. On the north side adjacent to the elevator and stairway was the office of Elizabeth Sibbald who maintained the stockholders' records. On the south side adjacent to the elevator was a large expansion space used for record storage, primarily the voluminous records pertaining to the various valuation studies. The west end contained (and I don't recall the exact arrangement) the Offices of the Engineer of Power (Frank S. Morgan), Engineer of Research (H. E. McWethy, E. J. Whittlesey), and Engineer of Maintenance of Way (Oscar F. Moore; Assistant Engineer W. F. Clark).

Power
L. E.
Erickson

Other offices located in St.Paul at this time were: St. Paul Division Superintendent (E. D. Templeton) and St. Paul Claim Agent (F. B. Brady) at College & Wabasha; Superintendent of Equipment (Lynn G. Barnes), Purchasing Agent (Walter L. Larson) at the Snelling Shops; and Superintendent of Employment (C. C. Champlin) at Snelling Station.

ST. PAUL CITY RY.
COLLEGE & WABASHA OFFICE & SUBSTATION

Layout according to the 12-31-1919 Valuation:

Basement
Hallway-First Floor
Room 104 Track Dept.
Room 105 Claim Dept.
Room 107 Cashier's Dept.
Room 108 Lost & Found Dept.
Room 109 Chief Clerk's Office
Room 110 Superintendent's Office
Room 111 Supervisor's Office

Hallway and Toilets
Room 201 and 205 Legal Dept.
Room 203 Park Dept.
Telephone Operator's Room
Store Room

Substation-Basement
" -First Floor
" -Balcony

MINNEAPOLIS ST. RY.
BUILDINGS
1-1-1916

Office and Substation (11th St.& Hennepin Ave.); 3-story and basement; brick, stone and reinf. concrete. Garage: 1-story; brick. (733 s.f.)

Steam Power Station (6th Ave.S.E. & Mississippi River); 2-story; brick and stone.
Coal Storage Bins: east of the building; reinforced concrete.
Includes one steel viaduct 164'4¼" long; 13 steel bents enclosed in north concrete wall.
Viaducts and Trestles: east of the building:
North Viaduct: west end towered; east end on abutment; steel 102'0" long; 3 deck plate girder spans (24'0"+30'0"+48'0") on steel bents.
Center Viaduct: west end of viaduct at southeast corner of coal storage bins; steel 121'6" long; 4 deck plate girder spans (24'9"+40'0"+40'0"+16'9") on steel bents.
Machinery Viaduct: steel 408' long; 13 deck plate girder spans (5 @ 19'10"+ 1 @ 29'10"+ 7 @ 40'0") on steel towered bents. West end rests on building foundation at engine room.
Filter Plant: 2-story; brick and reinforced concrete.
Machine Shop and Store Room: 1 and part 2-story; brick. (east of building)
Motor Room: 1-story; brick.

Girard Ave. Substation: 1-story and basement; brick and concrete.
Girard Ave. Residence: 1-story and basement; tile and concrete.
Lake St. Substation: 1-story; brick and stone.
Minnehaha Substation: 1-story and basement; concrete and brick.
University Substation: 1-story and basement; brick and concrete.
University Garage: 1-story; brick.
32nd Ave. N. (Lowry) Substation: 1-story; brick and stone.
Lower Dam Substation (7th Ave.S.E.&Miss. River): alterations to 1-story tile and stone building.
East Side Carhouse and Office: 1 and part 2-story and part basement; brick and stone. Car heating equipment (Peter Smith Model 2-C heater) in carhouse for instruction of motormen.
Storage Shed: frame, metal clad; 8'9" x 32'0" x 13'0".
Lake St. Carhouse: 1-story; brick and concrete.
Club House and Office: 2-story and basement; brick and concrete.
Hose House: 1-story; brick. (122 s.f.)
Yard Office: 1-story; frame. (44 s.f.)
Nicollet Ave. Carhouse: 1-story; brick and concrete.
Club House and Office: 2-story and basement; brick and concrete.
Boiler House: 1-story and basement; brick and stone. 2 wood trusses 68'0" span, 10'6" rise; 1 wood truss 44'0" span, 8'0" rise. Brick chimney. One Stirling Water-Tube Boiler (287½ h.p.): 1 bottom drum, 2 steam drums, 1 water drum, each 36" x 10'0".
Station Garage (Old Carhouse): 1-story; brick. (Mentions engine foundations.)
Garage and Oil House: 1-story; brick.
Storehouse: 3-story; brick. (Mentions dismantled freight elevator.)
Storehouse: 1-story; brick and stone.
Storehouse: 1-story; brick.
Mill Room and Blacksmith Shop: 1-story; brick.
North Side Carhouse: 1-story; brick and concrete.
Club House and Office: 2-story and part basement; brick and concrete.
Yard Office: 1-story; brick. (410 s.f.)
Coal Storage: 1-story; concrete. (5212 s.f.)

Harriet Terminal House: 1-story; brick and concrete.
Como Terminal House: 1-story and basement; brick and concrete.

Harriet Waiting Platform and Shelter: steel-constructed canopy shelter (1643 s.f.); concrete retaining walls and stairways.
France Ave. Comfort Station: 1-story; frame. (17 s.f.)
France Ave. Yard Office: 1-story; frame. (27 s.f.)
Harriet Loop Comfort Station: 1-story; frame.
First Ave. North Storehouse (1st Ave. N. between 6th and 7th Sts.): 1-story; frame.
Excelsior Wye Waiting Station (W. Lake St. and Excelsior Blvd.): 1-story; steel; open.
Fifth Ave. Comfort Station (5th St. N. and 5th Ave. N.): 1-story; frame.
Comfort Station (20th Ave. N. and Washington Ave. N.): 1-story; frame.

BUILDING LAYOUTS
BASED ON FURNITURE INVENTORY
1-1-1916

11th St. Office & Substation

Basement-north end: cable room, laboratory, laboratory machine room, blueprint room, mail room, janitor's room.
Basement-south end: transfer room, operating dept. vaults, auditing dept. storeroom, substation basement, bus bar room, workroom.
First floor: substation, room 100-108, chief clerk's office, lost article dept., room 102 and hall, room 106.
Second floor: auditor's vault, auditor's office, room 202, room 204.
Third floor: suite 302 to 306, rooms 300 to 301, room 303, suite 305 and 313, room 309-308, suite 310 and 312, room 312, law library in room 306.

Steam Power Station

First floor: engine room, lavatory. Second floor: engine room. Office engine room. Machine Shop first balcony. Switchboard gallery. Boiler house motor room first floor. Basement boiler room. Boiler room toilet. Boiler room first floor.

Machine Shop and Storeroom: machine shop first floor and second floor; machine and storeroom.

East Side Carhouse & Office

Main office. Trainmen's room. Trainmen's lavatory. Workroom. Trainmen's restroom. Ladies' lavatory. Trainmen's reading room. Doctor's office. Trainmen's pool hall. Barber shop.

Lake St. Clubhouse & Office

Superintendent's office, south end. Superintendent's sub-office, south end. Main office. Trainmen's room. Trainmen's lavatory. Storeroom, west end. Trainmen's rest room. Trainmen's reading room. Barber shop. Trainmen's pool hall. Doctor's office. Repair room. Basement, west end. Oil House.

Nicollet Clubhouse & Office

Basement-storeroom, south end. Basement-north end. First floor, south end, underground dept. office. Repair dept. Superintendent's office, north end. Main office, north end. Trainmen's room. Trainmen's lavatory. Workmen's lavatory, north end. Workshop storeroom, north end. Trainmen's restroom. Trainmen's reading room. Trainmen's pool hall. Doctor's office.

North Side Clubhouse & Office

First floor storeroom. Work room. Workmen's lavatory. Trainmen's room. Trainmen's lavatory. Superintendent's office. Main office. Trainmen's restroom. Trainmen's reading room. Doctor's office. Trainmen's pool hall.

St. Paul City Railway
Buildings
1-1-1920

Office & Substation	College Ave. & Wabasha St.
Hope St. Substation	E. 7th St. & Hope St.
Concord St. Substation	Concord St. & Isabel St.
Duluth Ave. (E. 7th St.) Car Station	E. 7th St. & Duluth Ave.
Snelling Car Station and Substation	Snelling & University Avenues.
Employment Office	
Snelling Shops	Snelling & University Avenues.

- Machine Shop
- Repair Shop
- Smith Shop & Boiler House
- Foundry
- Forge & Structural Shop
- Paint Shop
- Mill Building
- Storage & Lumber Shed
- Dry Kiln
- Storehouse
- Cement & Oil House
- Yard Foreman's Office
- Car Storage
- Track Tool Room
- Overhead Dept.

Miscellaneous Structures
- Pump House & Conduit
- Fire Protection Water Tank
  - (Reinforced Concrete Tank)
- Oil Tank & Pump House
- Yard Coal Bin
- Coal House
- Yard Telephone Booth (Brick)
- Yard Telephone Booth (Frame)
- Transfer Pit
- Scale House
- Scrap Crusher House
- Property Line Fence
- Railing around Parkways
- Flag Poles (2)
- House for Rail Bender
- Miscellaneous Outside Piping & Lighting

Restaurant @ Fairgrounds

ST.PAUL CITY RAILWAY
BUILDINGS
1-1-1920

Building	Foundation	Walls	Roof
1.Office & Substation, College & Wabasha	Rubble	Stone,Brick	Conc. on steel trusses
2.Car Station, Snelling & University	Concrete	Brick,Con.Blk.	Reinf. Concrete
3.Employment Office, Snell. & Univ.	Concrete	Brick,Con.Blk.	Reinf. Concrete
Snelling Shop Buildings:			
4.Machine Shop	Concrete	Brick,Con.Blk.	Reinf. Concrete
5.Repair Shop	Concrete	Brick,Tile	Conc. on steel trusses
6.Smith Shop & Boiler House	Concrete	Brick,Con.Blk.	Reinf. Concrete
7.Foundry	Concrete	Brick,Con.Blk.	Reinf. Concrete
8.Forge & Structural Shop	Concrete	Brick,Tile	Conc. on steel trusses
9.Paint & Erecting Shop	Concrete	Brick,Con.Blk.	Reinf. Concrete
10.Mill Building	Concrete	Brick,Con.Blk.	Reinf. Concrete
11.Storage & Lumber Shed	Concrete	Sheet Metal	Composition on wood
12.Dry Kiln	Concrete	Brick,Con.Blk.	Reinf. Concrete
13.Storehouse	Concrete	Brick	Conc. on steel girders
14.Cement & Oil House	Concrete	Brick	Conc. on steel girders
15.Yard Foreman's Office	Concrete	Hollow Tile	Composition on wood
16.Car Storage	Concrete	Sheet Metal	Composition on wood
17.Track Tool Room	Concrete	Brick,Tile	Reinf. Concrete
18.Overhead Dept. Building	Concrete	Brick,Tile	Conc. on steel girders
19.E. 7th St. Carhouse	Conc&Rubble	Brick	Reinf. Concrete
20.Hope St. Substation	Conc&Rubble	Brick	Conc. on steel trusses
21.Concord St. Substation	Concrete	Brick	Conc. on steel trusses
23.Restaurant at the Fairgrounds		Sheet Metal	Sheet Metal
24.Waiting Station, Larpenteur Ave.		Sheet Metal	Sheet Metal
Snelling Shop Structures:			
A.Pump House and Conduit	Concrete	Brick	Reinf. Concrete
B.Fire Protection Water Tank	-----------Reinforced Concrete--------------		
C.Oil Tank Pump House	None	Brick	Composition on wood
D.Yard Coal Bin	Concrete	Concrete	None
E.Coal House	Concrete	Brick	Composition on wood
F.Yard Telephone Booth	Concrete	Brick	Galvanized iron
G.Yard Telephone Booth	None	Frame	Galvanized iron
H.Transfer Pit	Concrete	Concrete	
J.Scale House	Concrete	Brick	Composition on wood
K.Scrap Crusher House	None	Frame	Wood
L.Property Line Fence			
M.Railing Around Parkways			
N.Flag Poles (2)			
O.House for Rail Bender			
P.Miscellaneous Outside Piping & Lighting			

BUILDING LAYOUTS
BASED ON FURNITURE INVENTORY
1-1-1920

Office & Substation

Basement. Hallway-first floor. Room 104 Track Dept. Room 105 Claim Dept. Room 107 Cashier's Dept. Room 108 Lost & Found Dept. Room 109 Chief Clerk's office. Room 110 Superintendent's office. Room 111 Supervisor's office. Hallway and toilets. Room 201 and 205 Legal Dept. Room 203 Park Dept. Telephone Operator's room. Storeroom. Substation-basement. Substation-first floor. Substation-balcony.

Snelling Carhouse

Dispatcher's office. Trainmen's room. Club room. Reading room. Restroom. Barber shop and balcony. Tool supply room. Basement. Substation. Employment office; waiting room; filing, instruction and doctor's office.

Machine Shop

Master Mechanic's office. Shop Superintendent's office. First floor shop. East balcony. West balcony.

Repair Shop

First floor shop. Paint room. Oil room. Storeroom. Stock room. Balcony. Wash room. Lunch room.

Pipe Shop & Boiler Room

Pipe shop. Kitchen. Boiler room.

Foundry

Foreman's office. Main shop. Brass room. Core room. Pattern room.

Forge & Structural Shop

Shop. Foreman's office. West tool room.

Paint & Erecting Shop

Material Clerk's office. Draftsman's office. Hallway office. Shop-first floor. Tool room. Tire repair dept. Ladies' restroom. Paint mixing room. Balcony.

Mill Building

Shop.

Storehouse

Accounting Dept. Main hallway. Mr. Whiteford's office. Purchasing Dept. Basement. First floor. Second floor. Second floor stationery room.

Track Tool Room

Office. Blacksmith's shop. First floor. Second floor. Second floor office.

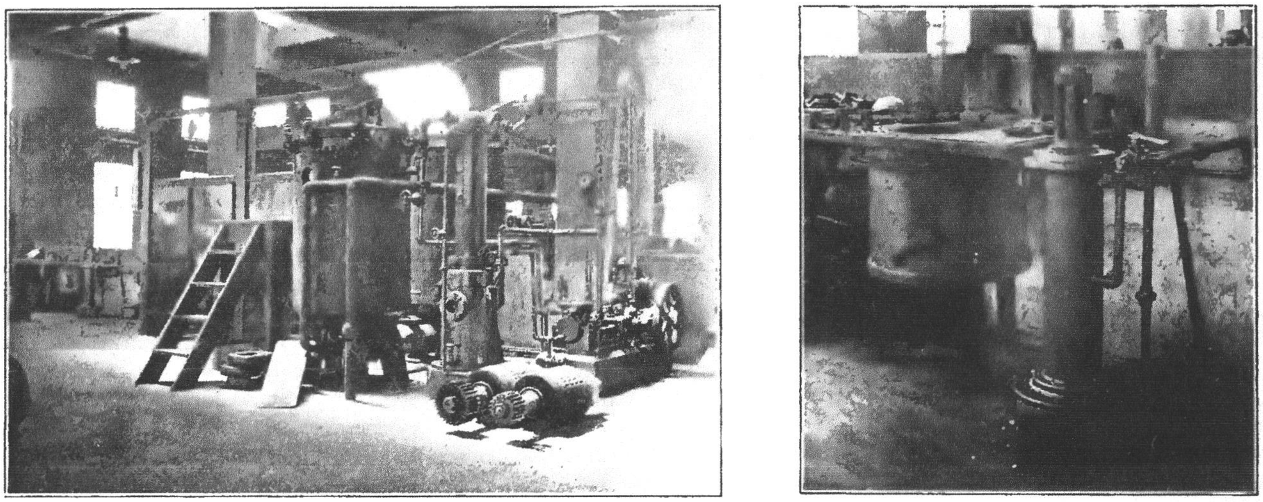
E. 7th St. Car Station

Supply room. Boiler room. Ladies' toilet. Station Foreman's office. Clerk's office. Cashier's office. Trainmen's room. Barber shop. Men's toilet. Dispatcher's office. Club room. Doctor's office. Reading room. Restroom.

Contents of the
Back Pocket

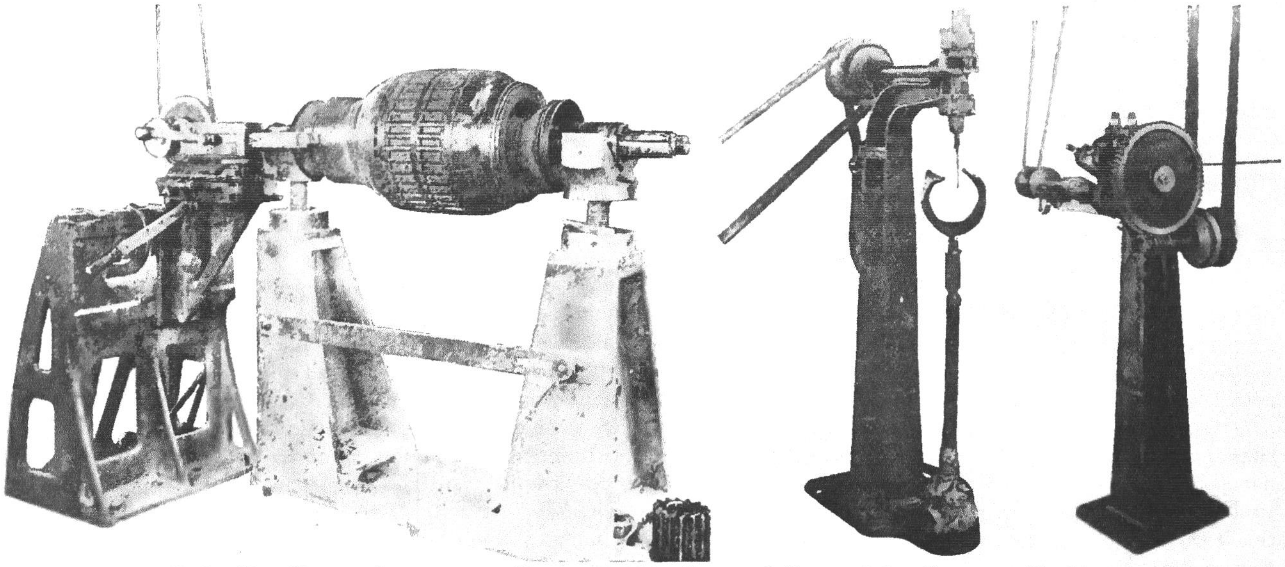
SPECIAL SHOP TOOLS OF THE TWIN CITY RAPID TRANSIT COMPANY

In the shops of the Twin City Rapid Transit Company, Minneapolis, Minn., a number of special tools have recently been built which assist materially in lowering the cost and bettering the quality of manufactured parts and repair work. Among them are a babbitt saw, commutator segment bender and cutter, commutator grooving machine and a journal babbitting plant, comprising a special arrangement of melting pot and a pneumatically operated casting mandrel.



Twin City Shops—Vacuum Impregnating Plant and Babbitt Outfit with Air-Operated Mandrel

It is the practice in the Twin City shops to maintain armature shafts to one of three standard diameters which vary in 1/16-in. sizes. When a shaft is worn down to the smallest size a bushing is shrunk on and turned down to the largest standard size. All armature bearings are babbitted and bored to fit axles of one of the three standard sizes. The accompanying illustration shows the specially designed babbitting outfit which has recently been installed. The plant comprises a melting pot and attachments and a pneumatically operated casting mandrel. A cast-iron work table surrounds the top of the melting pot. Heat is furnished by an American gas furnace.



Twin City Shops—Commutator Slotter, Babbitt Saw and Commutator Segment Machine

A special arrangement for melting babbitt from the interior of the old shells is mounted on the cast-iron table surrounding the melting pot. This melting device comprises a cast-iron holder in which can be placed two journal brasses, so that the flame from a gas burner may be directed against the interior of either journal brass. In practice, as the flame is not turned directly into one of the shells from which the old babbitt is being removed, the shell standing nearby receives enough of the waste heat so that by the time the babbitt has been melted out of the first shell, the second one is heated nearly to the melting point. As the babbitt melts and leaves the interior of the shells it runs through grooves in the bottom of the cast-iron holder and falls into the large melting pot. In this way the worn-out bearings are freed of babbitt and all the babbitt is returned directly to the heating pot without first having cooled and lost its heat.

Probably the most interesting part of the babbitting outfit is the pneumatically operated casting mandrel, shown in the same illustration. This device is arranged to furnish a core around which the bearing shell may be babbitted. The core is attached to an air piston enclosed in a cylindrical iron casting. After a bearing shell has been babbitted about this core air pressure is turned on and the core is mechanically withdrawn into the large cylinder, leaving the bearing ready for removal and finishing. The piston arrangement of the air cylinder is such that when the air pressure is first turned on for the removal of the mandrel a hammer blow is automatically given the piston rod, thus serving to loosen the core from the babbitt. The large body of iron in the core serves to cool the babbitt quickly which, combined with the mechanical removal of the mandrel, enables the babbitting work to proceed rapidly.

The insides of the bearings are finished in a boring mill provided with a special boring bar. This bar carries cutting tools which remove the surplus metal. These cutting tools are followed by seven rollers supported on the same bar. Thus in one operation the interior of the bearing is bored and given a smooth rolled surface.

The bearings are cast with plugs placed in the oil wells, but these plugs do not extend through the babbitt. In finishing the oil wells a hole is first drilled through the babbitt and then the remainder of the babbitt is cut out with a special babbitt saw. This saw is also illustrated and was designed and built in the Twin City shops. The saw blade is about 6 in. long and 1/16 in. thick held vertically in a chuck. The machine is belt-driven and a cross-head serves to give the connecting rod supporting the saw chuck an up-and-down motion. The saw is operated at about 350 strokes per minute. A foot treadle is provided so that the operator may throw the driving mechanism in and out of gear while he is handling the work. The bearings are not rigidly fastened beneath the saw, but are held in an adjustable split rest which is mounted on a swivel post. This method of finishing the oil-well bearings by sawing away the babbitt at the sides is said to afford a smooth interior to the bearing without any danger of loosening the babbitt from the brass.

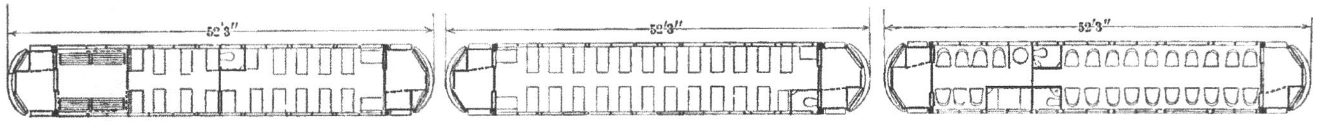
A very useful machine for bending and cutting commutator segments has recently been built in these shops and installed in the electrical department. An illustration of this machine is presented. Copper bar of the proper cross-section when fed into this machine is bent to any desired radius and cut into commutator segments of any desired length. The bar in entering the machine passes one fixed roll and two adjustable rolls. The fixed roll is operated by a worm-gear belt driven through a friction clutch. By means of adjusting screws on two of the rolls the radius of the finished segment can easily be changed. After the copper bar has been rolled through for the length of one segment, it is cut off with a circular saw held in a horizontal position and operated by two round leather belts. The saw blade is 4 in. in diameter by 0.032 in. thick and runs at about 2000 r.p.m. It is fed against the copper bar by hand. With this machine commutating segments are bent to the correct radius and cut off to the proper length, so that they require no finishing except drilling. The operation of the machine is so simple that it can be tended by a boy and thus the segments are manufactured at a low cost.

Another illustration shows a commutator slotter which has been built in the Twin City shops. This slotter comprises two parts—the standards in which the armature is supported and adjusted to the correct height and angle and the slotter mechanism with its table which moves along a cast bed. With this machine the slots are cut by a hack-saw blade, which is so supported that it can be adjusted for cutting out the mica from between the segments of a commutator of any size. The saw is operated by a connecting rod and an eccentric connecting with a belt-driven pulley. By means of adjusting screws beneath the blades which support the armature journals, the commutator may be adjusted very accurately to the proper height, and likewise, the saw is adjustable in both vertical and horizontal planes so that it may be made to cut away only the mica between the segments. This slotter is operated by a boy and can slot a commutator in about 60 minutes.

In its electrical shops the Twin City company has a very complete installation of vacuum impregnation machinery of the J. P. Devine type. One of the illustrations shows this vacuum-impregnating plant and the front of the bake oven built in connection with the plant. The apparatus in this installation comprises a liquor and a vacuum tank, a condenser and a combined air-pressure and vacuum pump. This installation differs from some others in that the mixer in the liquor tank is operated by belts driven from the pump fly wheel. A solid compound is used for insulating field coils, the method following in general the customary practice for this work. Experiments are now being conducted to determine the efficiency of a number of other compounds. After impregnation the coils are dried in the nearby bake ovens. These ovens are built directly on the gallery floor which supports the impregnating plant. The walls of the ovens are built of hollow tile surfaced on the outside with concrete. The interior of the ovens is divided into two chambers so that if there is only a small number of coils to be dried steam need be used for heating but one chamber. Each chamber is provided with ventilating holes in the top and the sheet-steel doors forming the fronts of the chambers have counterweights.

THREE-CAR TRAINS FOR THE CHICAGO & MILWAUKEE

It is expected that the Milwaukee extension of the Chicago & Milwaukee Electric Railroad will be completed by the middle of October. Then the company will inaugurate a limited train service between Evanston, Ill., and Milwaukee, 73 miles. The company will have a high-speed, double-track route throughout the entire length of the road, and it is planned that limited trains will make the run in three hours' schedule time, including layovers. This schedule later will be reduced. These limited trains will be made up of three coaches, coupled, as shown in the accompanying engraving. The Jewett Car Company is now building nine cars, which will be put into this limited service.



Chicago & Milwaukee Railroad—Three-Car Train

Reference to the illustration will show the detail arrangement of the train and the overall dimensions of the cars. The head car will be divided into three compartments, including a baggage room at the front, a smoking room and a main compartment. The middle car will be undivided and will be wholly for passengers. The rear car will be a combination parlor and buffet car. In the front end, which will be used as a smoking room, will be a small buffet kitchen on one side and the hot-water heater on the other. Two toilet rooms will be provided at the center of the car, and the rear end will have 20 chairs.

Each car will have four GE-73 motors mounted on Baldwin trucks, Type M control, Westinghouse automatic air brakes and Van Dorn couplers.

Russell Olson

From: "John Diers" <j.diers@mchsi.com>
To: "Russell Olson" <elrymn@earthlink.net>
Cc: "Aaron Isaacs" <aaron.isaacs@metc.state.mn.us>; <aaronmona@aol.com>
Sent: Saturday, January 21, 2006 9:11 AM
Subject: Re: Buses

On 1/20/06 7:27 PM, "Russell Olson" <elrymn@earthlink.net> wrote:

Russ/Aaron:

Here are some notes verbatim out of the book. I added a couple that I thought interesting.

12/10/45: *Paper car discontinued*

Beginning August 1, 1942, building at 31st and Blaisdell was remodeled and used for bus garage as a branch of No. 1. Operation began with 23 buses used on following lines: Nicollet-Hennepin, 38th St., W. 39th St., Airport, and Chicago Ave. Men report and cash in at Nicollet Station. (Note: this must have been the old track department building. I believe track #s 4, 5, and 6 in the car house were subsequently converted to bus along with a small addition on the west side of the building, what was called track #7. That addition was made in the late 40's before the whole building was remodeled in 53))

It does appear that the East Side operation was seasonal, but what an operation it must have been. There were no fueling or mechanical facilities at East Side so buses were probably serviced at No. 1 then shuttled to East Side for storage. Backing into those storage bays at East Side required a good eye and considerable skill. Even so, I wonder how many wayward buses ended up in inspection pits?

Effective April 10, 1948 Because indoor storage is not required during summer months, all buses operating from East Side Station were switched back to #1 Garage and buses from Snelling Station to #2 Garage. Schedules were re-split accordingly.

And Another earlier reference: *East Side Storage, January 10, 1948 6 runs operated from East Side as well as several Kenwoods, Nic-Henn, and Franklin buses were transferred to East Side.* (Note: This was done at the same time the NW Terminal line went bus. NWT was then served by extending several Bryn Mawr rush hour trips via E. Henn to Stinson and Broadway. There was no midday or weekend service.)

This note (below) may refer to the closing of Number 1 Garage. Given expanded facilities at North Side, Nicollet, and Lake Street it would have made sense to close what would have been a redundant facility. From this it appears that North Side got the work on the north end of town and Nicollet and Lake Street divided the rest. (An earlier note dated November 1, 1946 refers to the remodeling of NS to accommodate buses. NS appears to have been used as a satellite garage for No. 1)

Effective November 20, 1948 Extra list established at North Side Garage and all work and men at North Side placed under supervision of station foreman. Franklin Lyndale and St. Louis Park Robbinsdale lines as well as relief runs in which majority of work is one these lines was assigned permanently to North Side men. Regular runs on other lines operated from North Side, (Lowry, Humboldt, 2nd St. Columbia Hts.) still belonging to No. 1 men who transfer to North Side to work those runs.

I have never heard of buses at East Side. Ed Nelson was working at North Side then. I don't find anything in his notes. The only thing I can think of is thatit was for bus storage only, not operations. There was a car storage yard between 2nd St NE and University. The tracks were removed in 1945. The property was later sold but I don't have a date.